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Staining Methods for Tuberculous Sputum.—The Gram-Much staining methods for sputum smears after antiformin treatment are uncertain. A better method is the combined Ziehl-Gram staining, and especially Berka's Method (*Wien. Klin. Wchnschr., 1917.*)—*Zur Kritik der neuen Sputum-Untersuchungsmethoden auf Tuberkelbacillen, Z. Salom, Dissertation, Vienna, 1923, 23 pp., Abstract from Centralbl. f. d. Ges. Tuberk.-Forsch., November, 1923, xxi, 35.*—(*H. J. C.*)

Value of Several Methods of Sputum Examination.—By the examination of 127 sputums from clinically definite cases of tuberculosis, by subcutaneous guinea-pig inoculation, 35.7 per cent more open cases were found than by microscopic examination. It is, however, enough to make microscopic examinations for determining open cases since, according to Braeuning, cases of pulmonary tuberculosis which show bacilli only by guinea-pig inoculation are not particularly infectious. In certain cases the animal-inoculation test was negative even when microscopic examination was positive before and after inoculation; the excretion of tubercle bacilli occurs in some cases only intermittently.—*Über Meerschweinchenimpfungen mit Auswurfproben zur Trennung offener und geschlossener Lungentuberkuloser, Wankel, Ztschr. f. Hyg., June, 1923, c, 35.*—(*H. J. C.*)

Staining of Tubercle Bacilli in Sputum.—Extensive application of Konrich's method of destaining with sodium sulphite shows that it has no advantages over other methods in current use. The Ziehl-Neelsen method remains the one of choice.—*Ueber den färberischen Nachweis der Tuberkeblazillen im sputum, Zimmermann, Deutsche med. Wchnschr., January 4, 1924, l, 14.*—(*H. S. W.*)

Kerssenboom Stain for Tubercle Bacilli.—The Kerssenboom modification of the Ziehl technique (*Beitr. z. Klin. d. Tuberk.*, 1921, *xlix*) was used in 1200 sputum examinations with entire satisfaction. The early fading of the red color of the bacilli, which occurs after a few days, was the only disadvantage noted. Knipping modified the Kerssenboom method by using a less diluted methylene blue solution and applying this stain somewhat longer.—*Die Kerssenboomsche Tuberkelbazillen-Färbung, F. W. Knipping, München. med. Wchnschr., May 30, 1924, lxxi, 720.*—(*E. R. L.*)

Technique of Guinea-Pig Inoculation of Bacilliferous Feces.—The search for tubercle bacilli in the fecal matter of the tuberculous who do not spit is of considerable diagnostic importance. As Sergent says, certain preliminary checks or guarantees must be established, namely: (1) *Controls*, as follows: (a) search for bacilli in the stools of subjects with no suspicion of tuberculosis, (b) search for bacilli in the stools of those known to have bacillary sputum. (2) *Elimination of sources of error.* Among these, the presence of nontuberculous acid-fast bacilli may be dismissed, as these are not found in the stools. It is more likely that bacilli present in the stools may escape recognition unless great care and patience are exercised. Guinea-pig inoculation is the procedure of choice in dealing with suspected sputum, and is of equal importance in dealing with feces, if a suitable technique be used to avoid secondary infections and toxic phenomena and at the same time not interfere with tuberculization. In the work here reported, the feces are treated with ligroin-ether. The method follows: About 50 gm. of carefully collected feces (in a sterile vessel) are placed in a glass graduate, or a mortar if they are hard. They are well broken up and stirred with a rod, adding little by little sufficient 25 per cent sodium-chloride solution to make a semiliquid emulsion. They are then passed through sterile gauze to remove cellulose and other gross debris. The material is then poured into two tubes, centrifugated, and refilled to two-thirds of their height and balanced. To each tube is

added 2 cc. of a mixture of equal parts of sulphuric and ligroin ether. After shaking, they are stoppered with sterile rubber. They are then centrifugated 10 minutes at 4000 to 5000 revolutions. One then finds below the uppermost layer of ether a brownish cake of 1 to 2 mm. thickness, in which are contained the tubercle bacilli. A small portion of this is removed with a platinum loop and spread on slides covered with acetic egg albumin, stained and examined. The rest is removed from the tube and placed in a small sterile receptacle, mixed well with 1 or 2 cc. of normal serum and injected subcutaneously into two guinea pigs. The contact with the ether mixture has been found not to impair in any way the viability of the tubercle bacilli, as shown by inoculation of suitable media, whereas secondary microörganisms rarely grow to any extent. All the guinea pigs inoculated with known bacilliferous feces have become tuberculous, an inflammatory reaction about the site of the inoculation usually ensuing within a few days, and lymphadenitis about the fiftieth day. At least one of the two guinea pigs always survived secondary infection or toxic accidents.—*Technique d'inoculation de feces bacillifères au cobaye, E. Moreau, Rev. d. l. Tuberc., September, 1923, iv, 490.*—(*A. P.*)

Tubercle Bacilli in Feces.—Nussel's method was applied to 120 tuberculous cases, and it was found that cases with positive sputum also had positive feces. It is concluded that this method is reliable for the demonstration of the bacillus in the feces.—*On the Examination of Tubercle Bacillus in Feces, T. Arai, Iji Shimbun, January, 1924, no. 1131, Abstracted from Japan Med. World, March, 1924, iv, 70.*—(*M. M.*)

Intracutaneous Tests with Tuberculin Mixed with Autogenous Serum.—The intracutaneous reaction was compared, when using 0.1 cc. tuberculin and 0.05 cc. of the same solution with 0.05 cc. of fresh blood or serum of the patient. The most suitable dilution was 1 to 5,000. The skin thickening was best read after 60 hours. The relation of the intracutaneous autogenous serum tuberculin to the tuberculin reaction (1:5,000) is believed to give an insight into the grade of toxemia in tuberculous individuals as well as to indicate the amount of active immune substances circulating in the blood.—*Die Vergleichende Intradermoreaktion mit Tuberkulin und mit Eigenserum als Mass der spezifischen Überempfindlichkeit in der Tuberkulose, C. Fischer, Ztschr. f. Tuberc., April, 1923, xxxviii, 71.*—(*H. J. C.*)

Toenniessen's Tuberculo-Protein in Diagnosis of Tuberculosis.—Diagnostic tests were made with Toeniessen's tuberculoprotein (*T. P.*), a preparation differing from O. T. in containing a pure protein of 12.6 per cent nitrogen content. The action, in general, was like that obtained with *O. T.*, only the focal, local and general reactions occurred later and ran a milder and more protracted course. In 2 cases the temperature remained slightly higher for 2 weeks after injection, and prolonged focal reactions were obtained twice. These reactions suggest caution both in diagnosis and therapy. Further observations are desirable. The advantage of the preparation is its constant action and dosage.—*Spezifische Diagnostik der Tuberkulose mit Toenniessens Tuberkulo-Protein, J. Blum, Beitr. z. Klin. d. Tuberk., April 1923, lv, 106.*—(*H. J. C.*)

Human and Bovine Tuberculin.—After reviewing the literature the results in 80 cases are recorded. Neither the cutaneous nor the intracutaneous use of human and bovine tuberculin permits drawing conclusions as to the type of tuberculous infection being dealt with. The primary differences noted following the use of human or bovine tuberculin may be entirely absent at a second testing. It is of great importance to use a tuberculin of known toxicity that has been determined by testing children.—*Erlaubt die Anwendung von humanem und bovinem Tuberkulin einen Schluss auf die Art der Tuberkuloseinfektion, Nehring, Ztschr. f. Tuberk., May, 1923, xxxviii, 182.*—(*H. J. C.*)

Red-Cell Sedimentation Test in Tuberculosis.—When one adds sodium citrate to blood *in vitro*, thereby rendering it incoagulable, the formed elements form a sediment, and three distinct layers separate: (1) the lowest, of red cells, (2) the middle, of white cells, and (3) a supernatant transparent layer of citrated plasma. The rapidity of sedimentation varies according to physiological and pathological conditions; these were first studied by Fahraeus. Variations in the composition of the medium are of the greatest importance; sedimentation is most rapid in a solution of fibrinogen, slower in one of globulin, slower still in one of pure serum. Regarding the cells themselves, we have to consider their composition, volume and number. The greater the number the slower the sedimentation. *Technique:* One aspirates into a properly calibrated syringe 0.2 cc. of a 3.8 or 5 per cent sodium-citrate solution; then a vein is punctured with a fine needle, and 0.8 cc. of blood is aspirated and mixed by gentle agitation of the tube. This mixture is allowed to stand five or six hours. Vigorous shaking is a necessary preliminary. Linzemeier used small tubes of 3 or 4 mm. diameter, 6.5 cm. in height with a mark at the level of 1 cc. and at 6, 12 and 18 mm. below this. In his method the time is noted that the red cells take for their upper level to reach each of these marks in

minutes. In the normal person they reach the 18-mm. mark in from 50 to 300 minutes. This method is rather too tedious for clinical application. The method of Fahraeus, modified by Westergreen, is as follows: Tubes 300 mm. in height and 2.5 mm. in diameter are used, with a mark 200 mm. from the bottom of the tube. One part of 3.8 per cent sodium-citrate solution is mixed with four parts of blood. After gentle agitation, the mixture is poured into the tube up to the 200 mm. mark. This is read after one-half hour, one hour, two hours, and twenty-four hours, the height of the supernatant-fluid column being measured. The level attained by the red cells in twenty-four hours simply gives a rough idea of their number. In normal men, the level reached by the red cells after one hour is 3 mm., in women 5 to 10 mm. Conditions known to influence the rapidity of sedimentation are pregnancy and menstruation, acute febrile infections, tuberculosis, syphilis, nephritis, malignant tumors and certain psychoses. *Findings in pulmonary tuberculosis:* Sedimentation after one hour is always greater than normal. In doubtful cases a very rapid sedimentation should suggest tuberculosis, a normal value practically excludes it. Also, if one groups pulmonary tuberculosis according to the type and severity of the disease, one finds that the fibroid types approach normal values, the proliferative inflammatory types give higher readings, the exudative types with severe destructive changes very high readings. Bacillary cases give higher readings than nonbacillary, generally speaking, and the cavity higher than the noncavity. A persistently high sedimentation reading implies a bad prognosis and generally indicates extension of the disease. Readings approaching normal, not over 10 mm., are proof of amelioration, especially if they decrease on repeated tests. The reaction is more delicate than the other clinical signs and permits a clearer estimate of the future and a more precise judgment. The favorable effects of hygienic-dietetic teeatment, of tuberculin, and especially of artificial pneumothorax, are reflected in the curve of sedimentation, which, however, does not change as rapidly as does the clinical aspect of the case, although it is a surer indication of physiological stability.—*La réaction de la sédimentation des globules rouges dans la tuberculose, sa valeur diagnostique et pronostique, A. Delhaye, Rev. d. l. Tuberc., December, 1923, iv, 599.*—(*A. P.*)

Red-Cell Sedimentation Test in Tuberculosis.—Using Darlanvi's method of erythrocyte sedimentation, 4 normal males and 13 normal females all gave negative results, while 10 male cases in various stages of tuberculosis gave positive results, and of 7 female tuberculous patients only one gave a negative result (this case ran a normal temperature).—*On Colloidability of Tuberculous Serum and Sedimentation Phenomenon of Erythrocytes in Tuberculosis. I. Communication, S. Amaya, Kekkaku, July, 1922, I, no. 4, Abstracted from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Red-Cell Sedimentation Test in Diagnosis of Tuberculosis.—A rapid settling out of the red blood cells in a tube of drawn blood speaks for a certain diagnosis of pulmonary tuberculosis. The sinking of these cells in the normal time does not rule out active pulmonary tuberculosis. This reaction indicates the onset of activity and the anatomic character of the process, the most precipitate (rapid) reaction being present in exudative lesions and the slower reaction in latent or fibroid types of the disease. As to prognosis, a more rapid settling out in progressive tuberculosis speaks in general for a less favorable outlook.—*Die Bedeutung der Senkungsbeschleunigung der Erythrozyten für die Klinik der Lungentuberkulose, A. Freund and E. Henschke, Deutsche med. Wchnschr., February 1, 1924, 1, 142.*—(*H. S. W.*)

Red-Cell Sedimentation in Pulmonary Tuberculosis.—This study was undertaken in order to confirm the conclusions of previously cited authors. The technique followed was that of Fahraeus modified by Westergreen and fully detailed by Delhaye. *1: Sedimentation reaction and evolution toward cure:* In numerous sanatorium cases progressing favorably under hygienic-dietetic treatment, the sedimentation reaction was found to reflect faithfully the clinical improvement. *2: Sedimentation reaction and aggravation or deterioration:* In these cases a regular acceleration of the rapidity of sedimentation proceeded with the clinical aggravation. *3: Sedimentation reaction, a reflection of activity of lesions or of general condition:* This question was answered by a study of the reaction in patients with extensive more or less active disease but appearing in good condition. In all, the sedimentation figures were elevated in proportion to the gravity and extent of the lesions. *4: Sedimentation reaction and transient exacerbations:* It is well known that injections of old tuberculin may cause transient reactions in latent tuberculous foci, which are responsible for constitutional symptoms. In all those cases studied in which such positive focal tuberculin reactions were obtained, the sedimentation figures were temporarily increased. When no reactions obtained, there was no change in sedimentation. Cases are cited illustrating each of these points.—*Recherches sur la sédimentation des globules rouges dans la tuberculose pulmonaire, Maleve, Rev. Belge d. l. Tuberc., April, 1924, no. 4.*—(*A. P.*)

Red-Cell Sedimentation Test in Artificial Pneumothorax.—As a result of examination of 18 cases with artificial pneu-

mothorax it is concluded that with clinical improvement there is a diminution in the red-cell sedimentation values. During exudate formation the rate is increased, probably as a result of the increased absorption of split products. Pneumothorax is best performed only when a normal sedimentation rate is present, but a normal rate alone does not indicate that it is wise to discontinue a pneumothorax.—*Bedeutung der Blutsenkungsprobe beim künstlichen Pneumothorax, Mathilde Schneider, Ztschr. f. Tuberk., July, 1923, xxxviii, 420.*—(*H. J. C.*)

Arneth's Formula in Pulmonary Tuberculosis.—The study of the equilibrium of the neutrophilic leucocytes in the blood acquired interest since Arneth's first work in 1904 and 1905. But the value of this laboratory test has been disputed. Arneth originally divided the neutrophiles into five classes according to the number of their nuclei, and worked out a certain normal distribution. When the first classes (with few nuclei) increased, the formula was said to deviate toward the left. Such pathological deviation is observed in many acute pathological conditions and also under certain abnormal conditions, as in Europeans living in the tropics. The normal formula varies within certain definite limits. According to Arneth, however, it is deviated to the left in acute infections according to the gravity of the infection or lack of resistance. Arneth's original formula expressed the degree of deviation by a group of five figures. Von Bonsdorff modified it by using the sum of the product of the number in each class by its group number. Hynek's method is the simplest of all, simply giving the sum of the nuclei of a hundred neutrophiles. This leaves a possible variation between 100 and 500. The lowest actually observed was 108. In women the number habitually varies in health between 240 and 250, and in men between 250 and 260. The single figure has decided advantages. *Technique:* Any stain is satisfactory, but must not be too heavy. Hematoxylin-eosin, the stains of Giemsa, Leischmann, Romanowsky, etc., all yield good results. If one takes pains to get clear smears and not to stain too deeply, the lobes of the nuclei will stand out clearly, or, if superimposed, will be easily discernible. Too thick smears cause them to be pressed together. *Clinical results:* Study of a number of cases shows that very pronounced deviations correspond rather to a poor general condition than a severe local lesion. The form of the nuclei is also of some value, those which are irregular, crenated, or showing pseudopodia, indicating more hope than if perfectly round. A series of pneumothorax cases showed a deviation to the right in successful compression; to the left, if decompression was allowed. The deviation to the left is observed, not only when the general condition gets worse but before it does so. It is true that such common infections as colds, bronchitis, and digestive troubles may also cause some deviation. *Conclusions: 1.* In adult pulmonary tuberculosis, Arneth's formula deviated according to the lack of resistance shown rather than according to the anatomic gravity of the lesion. 2. Arneth's formula also shows a deviation in a variety of common affections. It is, generally, of greater prognostic than diagnostic value. It is of sufficient value to be more often employed and will often throw light on the evolution of the disease in a particular case.—*Les variations de la formule d'Arneth dans la tuberculose pulmonaire et leur valeur pronostique, T. and J. Stephani, Rev. d. l. Tuberc., April, 1923, v, 191.*—(*A. P.*)

Wildbolz Auto-Urine Reaction.—Exact examination of a large series of cases, specially selected and representing various groups, to determine the diagnostic and prognostic value of the Wildbolz test, led to the conclusion that it possesses no practical value and cannot be used to differentiate cases suitable for treatment from those not suitable.—*Die Verwertung der Wildbolzschen Methode bei aktiver Tuberkulose, W. v. Friedrich and J. László, Ztschr. f. Tuberk., May, 1923, xxxviii, 194.*—(*H. J. C.*)

Urochromogen Reaction of Tuberculous Urine.—The urochromogen reaction is easily performed and gives results as reliable as the diazo reaction.—*On the Prognostic Value of Urochromogen Reactions with the Urine of Tuberculosis Patients, Y. Kumagaya, Kekkaku, July, 1923, i, no. 4, Abstract from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Diazo, Urochromogen and Pirquet Reactions in Tuberculosis.—*On the Relation among Diazo, Urochromogen and Pirquet Reactions of the Urine in Tuberculosis, K. Kondo, Kekkaku, July, 1923, i, no. 4, Title from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Diazo Reaction of Tuberculous Sputum.—*On Diazo Reaction of the Tuberculous Sputum, H. Natori, Juzenkwai Zasshi, June, 1923, xxviii, no. 6, Title from Japan Med. World, December, 1923, iii, 281.*—(*M. M.*)

Agglutination Test in Diagnosis of Acute Tuberculosis.—Defense of the agglutinin reaction as an index of immunity to tuberculosis is justifiable on the basis of a study of 200 specimens of human sera from persons in various stages of tuberculosis, as well as from guinea pig sera. The agglutination titre was high. Positive agglutination was found in 88.5 per cent of the cases. Values under a titre of 1 : 80 indicate healed or healing tuberculosis; values with a titre

between 1 : 80 and 1 : 100 are doubtful; and values with a titre of 1 : 100 or above indicate active tuberculosis. This test when tried periodically on patients indicates the course of the disease. The general condition of the patient must be considered, however.—*Zur Frage der spezifischen Serodiagnostik der akuten Tuberkulose, Gittner, Deutsche med. Wchnschr., March 21, 1924, 1, 375.—(H. S. W.)*

Serum Globulin Precipitation Diagnosis and Prognosis of Tuberculosis.—Recently, Mátéfy has devised a serum reaction for tuberculosis which is at once both adequate and very simple in manipulation. The precipitation of the serum-globulin by aluminium sulphate is the key to the serological diagnosis. Aluminium sulphate is kept in stock in 0.5 per cent solution. At the time of test a solution of this substance is prepared in 0.05 strength and 1 cc. of this is added to 0.2 cc. of the serum for test. This mixture is shaken vigorously, kept at room temperature and is observed frequently for one and one-half hours. Normal serum in these circumstances shows slight clouding but no flaking; there is sometimes an accumulation of a slightly dense precipitate also in normal serum. But in pathological sera a thick, flaky precipitate quickly develops—the quicker the reaction the stronger positive it is considered and the more acute the tuberculosis. The test is not specific for tuberculosis, but, distinctly occurs in tuberculosis. It is present also in cancer, syphilis, nephritis and other conditions in which there has been considerable tissue destruction. Therefore, one must be sure of the diagnosis of tuberculosis beforehand. It is of considerable value in differentiating between tuberculosis and various conditions of neurosis, in the latter of which the serum never gives a positive reaction. Conditions superimposed on tuberculosis (bronchitis, furunculosis, gonorrhea, grippe, angina, etc.) do not alter the reaction. The test has bee n tried on 70 cases of tuberculosis and suspected tuberculosis with highly gratifying results. In certain cases it was of more significance than the temperature curve, as some cases of tuberculosis are fever-free. The test is also of great value in determining whether a case is active, inactive or healed, as the serum from the active cases always reacts and that from the inactive or healed cases never reacts. The test may also be used in prognosis.—*Ueber Globulinfällung im Serum tuberkulöser nach Mátéfy, F. Krömeke, Deutsche med. Wchnschr., February 22, 1924, 1, 231.—(H. S. W.)*

Incidence of Kahn Reaction in Tuberculosis.—In the evolution of any laboratory procedure it is important to determine the incidence of its occurrence, not only in the particular condition for which it is devised, but also in other conditions. Tuberculosis has been reported as giving positive complement-fixation reactions with syphilitic antigens. In view of this, it seemed of interest to apply the Kahn flocculation test to sera from known cases of tuberculosis. Seventy sera were tested with antigens furnished by Kahn and according to his original technique. Completely negative results were obtained with all but four of the sera tested. In two of these four cases both the history and the Wassermann test (Kolmer modification) were negative. In the other two cases the Wassermann test was positive and one of these showed a secondary rash while the other gave a definite history of an initial lesion. The author concludes that the Kahn reaction does not occur in tuberculosis with undue frequency.—*Incidence of the Kahn Flocculation Reaction in Tuberculosis, R. A. Kilduffe, Med. Jour. and Rec., July 2, 1924, cxx, 13.—(J. S. W.)*

Kolmer Complement-Fixation Test for Syphilis in Tuberculosis.—An analysis is presented of the Kolmer modification of the Wassermann test, with special emphasis on its suitability for a standard method with due regard to the requirements of the clinician. It is concluded that the method is suitable for adoption as a standard test and is superior to any yet proposed for this purpose. Out of 2,000 sera tested there were 104 cases of tuberculosis in various stages. Of these 10 gave positive reactions with the Kolmer modification. In 4 cases there was a definite history of syphilis. In 4 more cases no history was obtained and no definite clinical evidence of syphilis was found, while the remaining 2 cases were lost. The author believes, however, that, in view of the results obtained with the series as a whole and also of the conclusions formulated by other workers with the Wassermann test in tuberculosis, it is quite likely that all of the reactions obtained represented the presence of syphilitic reagin. It would appear, therefore, that nonspecific false positive reactions are encountered only with extreme rarity with this method, if, indeed, they occur at all.—*The Kolmer Modification of the Complement-Fixation test for Syphilis: Its Relation to the Clinician and to the Requirements for a Standard Technic, R. A. Kilduffe, Amer. J. M. Sc., March, 1924, clxvii, 392.—(J. S. W.)*

Lipoids in Serodiagnosis of Tuberculosis.—By treatment of tubercle bacilli with *Tetralin*, Wassermann has produced an antigen for complement fixation, but this is unreliable. If, however, lecithin be added to it, it becomes an entirely reliable and specific antigen. The lipoids of the tubercle bacillus have the same influence as does lecithin when added to the Wassermann antigen, but this substance is not as strong as the lecithin. There is a mutual reaction of some type between serum-albumin and

lecithin. Test-tube manipulations prove the specificity of the antigen in tuberculosis.—*Ueber die Wirkungsweise der Lipoide bei der Serodiagnostik auf aktive Tuberkulose und der Serodiagnostik überhaupt, F. Klopstock, Deutsche med. Wchnschr., January 4, 1924, l, 8.*—(*H. S. W.*)

New Wassermann Reaction for Tuberculosis.—The serum of the tuberculous patient is a lipophile serum. The new Wassermann reaction is based on this fact. It is made by extracting tubercle bacilli with *Tetralin*, a substance of great power in dissolving the lipoids of the tubercle bacillus. Alone the *Tetralin* extract does not react with tuberculosis sera, but on the addition of lecithin as an activator prompt reaction occurs in the sera of patients with active disease. According to Wassermann every human being, child or adult, whose serum reacts with the Tetralin-lecithin antigen, is suffering from active tuberculosis. Negative outcome of the test, however, does not exclude tuberculosis, as some sera, particularly in exudative and rapidly progressive or terminal tuberculosis, may fail to react. Jacob and Moeckel examined the serum of 302 patients, including cases of mild and severe tuberculosis, and cases which were definitely nontuberculous. Of the sera from 134 moderately and far advanced cases 87 per cent reacted positively. The intensity of the reaction in general paralleled the extent of the disease. Of the remaining 13 per cent a number were in the last stages of progressive disease. The others, while classified as advanced cases, were in a good state of nutrition and improving. Of 46 cases of mild tuberculosis 80 per cent reacted positively and 20 per cent negatively. These were cases of unquestioned tuberculosis, but of slight extent, for the most part confined to one apex, and afebrile. In 12 cases of tuberculosis of neck, lymph nodes, skin, bones, kidneys, bladder and mesenteric nodes, all sera but one reacted positively. This one was from a case of bladder tuberculosis, in which the diagnosis was made certain by cystoscopic examination. Fifty-three cases of suspected tuberculosis, clinically not active, were also tested. Eighty-nine per cent gave a negative reaction and 11 per cent a positive. Repetition gave the same result in the 11 per cent of positive cases. In 5 out of 6 the reaction was very weak. There appeared to be no clinical basis for considering these cases of active tuberculosis. Forty-eight cases in which tuberculosis was not even considered on a clinical basis were also studied. Eighty-four per cent gave a negative reaction and 16 per cent a positive. Of the 8 positively reacting patients in this series only one reacted strongly. This was a patient with gastrointestinal disease and marked emaciation. The lungs were definitely free from tuberculosis. Possibly there was tuberculosis elsewhere. In a number of other cases strong Wassermann reactions for syphilis were obtained, and a relation was suspected. Summarizing their experience the authors consider the method a valuable addition to our diagnostic methods, but not one of absolute reliability.—*Erfahrungen mit v. Wassermann's neuer Reaktion auf aktive Tuberkulose, L. Jacob and K. Moeckel, München. med. Wchnschr., April 25, 1924, lxxi, 539.*—(*E. R. L.*)

Wassermann's Complement-Fixation Test in Pulmonary Tuberculosis.—The serums from 73 sanatorium cases were examined by Wassermann himself. Positive results always agreed with the clinical diagnosis, and negative ones only in 11 of 17 cases, the 6 deviations being unquestionably active progressive cases with bacilli in the sputum, some with complicating laryngeal tuberculosis but not in such a condition that would account for the negative reaction obtained. There was no relation between Wassermann's tuberculosis reaction and the Pirquet reaction. The prognosis was more favorable the weaker was Wassermann's reaction, as verified by subsequent observations. A strict specificity, that is, a positive finding being absent in healthy people or those suffering from other diseases, was borne out. Even though the difficult diagnostic cases gave results which were not infallible, Wassermann's reaction is considered a step forward, like the red-cell sedimentation test, physical examination, etc.—*Erfahrungen mit der Wassermannschen Serumreaktion bei Lungentuberkulose, T. Janssen, Ztschr. f. Tuberk. July, 1923, xxxviii, 423.*—(*H. J. C.*)

Complement Fixation in Tuberculosis.—*Theory and Experimental Studies on Complement Deviation of Tuberculosis, K. Kohgami, Kekkaku, June, 1923, i, no. 3, Title from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Complement Fixation in Tuberculosis.—*Theory and Experiments on Complement Deviation in Tuberculosis, K. Kohgami, Kekkaku, July, 1923, i, no. 4, Title from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Complement Fixation in Tuberculosis.—*Theory and Experimental Studies on Complement Deviation in Tuberculosis, K. Kohgami, Kekkaku, October, 1923, i, no. 5, Title from Japan Med. World, February, 1924, iv, 45.*—(*M. M.*)

Complement Fixation in Tuberculosis.—If a proper antigen is used the complement-fixation test for tuberculosis might be reliable practically. Behring's antigen best fulfilled the requirement, giving a high percentage of positive results in tuberculosis

cases. The only objection to the antigen is that it gives nonspecific positive reactions for syphilis. By using the author's improved method—so called gelatine method—the complement-deviation test for tuberculosis proved more satisfactory.—*Theory and Practical Notices on Complement Deviation in Tuberculosis (concluded), K. Kohgami, Kekkaku, December, 1923, i, no. 6, Abstract from Japan Med. World, April, 1924, iv, 104.*—(*M. M.*)

Complement Fixation in Tuberculosis.—Tests with Petroff's and Besredka's antigens gave a greater number of positive reactions in the earlier stages of disease. It is believed that they promise a better diagnosis of early cases.—*Complement Fixation in Tuberculosis, I. Ogawa, Igaku-Chuwo Zasshi, June and July, 1923, xxi, nos. 1 and 2, Abstracted from Japan Med. World, December, 1923, iii, 278.*—(*M. M.*)

Complement Fixation in Tuberculosis.—The complement-fixation test for tuberculosis with Petroff's glycerol extract is considered a valuable aid in the diagnosis of early tuberculous affections.—*Review on Serum Diagnosis, or Complement Fixation Test, for Tuberculosis, Y. Nishida, Seii-Kwai Zasshi, June, 1923, xlii, no. 3, Abstracted from Japan Med. World, February, 1924, iv, 41.*—(*M. M.*)

Acute Tuberculosis of Eye.—*On Noteworthy Acute Tuberculous Affection of the Eye. (1) Equiveitis Acuta Tuberculosa and (2) Ophthalmitis Anterior Diffusa Acuta Tuberculosa, C. Oguchi, Nippon-No-Ikai, May, 1923, xiii, no. 19, Title from Japan Med. World, December, 1923, iii, 278.*—(*M. M.*)

Experimental Tuberculosis of Eye.—Injections of living tubercle bacilli into the common carotid led to characteristic eye lesions; these were studied in the iris, cornea, conjunctiva, lids, episclera, choroid, retina, retinal vessels and extraocular muscle tissue. Of 46 injected rabbits all developed eye lesions on the side injected; other organs also were affected and the rabbits usually died before the eye tuberculosis had run its full course; only three animals recovered and showed healed eye lesions. The average incubation period was six days. The experiments confirm previous findings of Stock who showed that tuberculosis by the blood attacks all the eye structures but the lens. These experimental infections with living bacilli are of a severe progressive type which, with a few exceptions, are different from the types of ordinary human tuberculosis of the eye. In the few mild cases tubercles of the iris and choroid ran a course like that seen in the eyes of human beings. The results are in harmony with clinical observations which show that tuberculosis of the eye in persons who have an active tuberculosis elsewhere in the body is usually severe and progressive, often necessitating removal of the infected eye, whereas chronic types of eye tuberculosis occur in persons with a mild or latent tuberculosis. Experimental study of eye tuberculosis corresponding to ordinary human types requires the use of small doses of attenuated or dead tubercle bacilli.—*Changes Found in the Eyes of Rabbits Following Injection of Living Tubercle Bacilli into the Common Carotid Artery, W. C. Finnoff, Am. Jour. Ophthalm., 1924, vii, 81.*—(*E. C.*)

Experimental Tuberculous Infection of Eye.—The right cervical vein of the rabbit was ligated, and tubercle bacilli were injected into the carotid artery on the same side. One month after injection there developed in the orbital conjunctiva yellowish gray opaque nodules of various sizes, while in the rectus muscle just below the site in the orbit of the conjunctival nodules a small elevation occurred. Microscopic examination of the nodules in the orbital muscles was positive for tubercle bacilli while corneal areas were negative. It is, however, considered that the corneal infection is possibly tuberculous.—*On Secondary Tuberculous Infection of the Ophthalmic Muscles, S. Ito, Chuo Ganka Iho, April, 1923, xv, no. 4, Abstracted from Japan Med. World, January, 1924, iv, 17.*—(*M. M.*)

Experimental and Clinical Tuberculosis of Eye.—Various nonpathogenic acid-fast bacilli used for infection in the eye of a guinea pig produce no traces of tubercle and set up only a transient inflammation. But when the strains have been passed through animals and again recovered, a certain number of them become pathogenic for guinea pigs. Of 22 guinea pigs infected in the eye with a passage strain of Friedmann's turtle bacillus, 4 died from tuberculosis of the internal organs. When original strains (not passed through animals) are used for a first infection, to be followed by a subsequent infection with virulent human or bovine strains, no modification of the type of infection set up by the second inoculation occurs. But when first infection is set up by virulent strains or by passage strains (nonpathogens) marked influence is exerted on the second infection. A number of cases of tuberculosis in later life show a relighting of scrofula of the eye which had been present many years earlier. Usually tuberculosis following an earlier scrofula is relatively benign, but sometimes after this condition or after phlyctenular conjunctivitis the later disease is unfavorable. Reinfection occurring frequently or from large doses is more often unfavorable. Because bacilli cannot be demonstrated in phlyctenules certain people attribute the formation of these structures to

toxins, but this is probably not true. Infection produces hypersensitiveness to tuberculin. The focal reaction is specific but the reaction can be elicited by both specific and nonspecific agents. Tuberculin is a curative agent in eye tuberculosis, but it must be used in very small doses and treatments with it should be continued for a year after healing occurs. Such treatment is not always productive of good results, however. The eye should be observed closely during the long continued treatment because by so doing one may catch the first sign of a local or general relapse. Intensity of tuberculin sensitiveness plays an important rôle in the pathology of tuberculosis and quantitative tests are helpful.—*Über Tuberkuloseprobleme (nach Untersuchungen am Auge), J. Igersheimer, Klin. Wchnschr., April 15, 1924, iii, 668.*—(*H. S. W.*)

Tuberculous Ulcer of Lip.—Tuberculous ulcer of the lip is perhaps the rarest form of oral tuberculosis. There are two types recognized: (1) the solitary ulcer beginning on the lip itself and (2) ulcerated areas secondary to mucous-membrane lesions of the buccal cavity, or to tuberculous lesions of the skin of the face, as in lupus. A case is reported of a miner, aged 26, who had an ulcer on the lip, situated midway between the centre of the lip and the angle of the mouth. It was about 1.3 cm. in diameter, almost round, and involved equally the skin and mucous membrane. About a year previously, while eating, the patient bit his lip. When the wound from the tooth was almost healed it again broke down and this time showed no tendency to heal. A Wassermann test was negative, and spirochetes were not demonstrable in a dark-field illumination of serum from the ulcer. X-ray films of the lungs showed silicosis and tuberculosis. In the sputum tubercle bacilli were demonstrable. Under local anesthesia a wedge-shaped section of the lower lip containing the ulcer was excised and sectioned. The microscopic picture showed typical tubercles, with epithelioid cells, round-cell infiltration, and giant cells with eccentric nuclei. The diagnosis was tuberculous ulcer.—*Case of Solitary Tuberculous Ulcer of the Lip, G. T. MacPherson and H. W. Gregg, J. Am. M. Ass., March 22, 1924, lxxxii, 966.*—(*B. T. McM.*)

Tuberculosis of Tonsils and Adenoids.—This exhaustive study, including many X-ray pictures, derives its material from the histological examination of the tonsils and adenoids removed from 3,260 patients since 1912. After a review of the literature the authors discuss their own material, comprising 50 of the above patients on whom postoperative observations were made. Forty were observed for from 5 to 10 years, and 10 for at least two years. Each had an X-ray examination of the chest and a general examination at least once a year following the removal of the tonsils and adenoids. In each of these patients the tuberculous nature of the lesion in the tonsils or adenoids was verified by the pathological department. They conclude: *1:* Tuberculosis of the tonsil is usually a bovine-bacillus infection. This conclusion is based on the age incidence (over 50 per cent of the patients were less than 10 years of age); the frequency of the involvement of the cervical and mediastinal lymph nodes; the strikingly low incidence of pulmonary, intestinal, or other complications during the 5 to 10-year period of observation; and the growth, appearance, and excellent general physical condition of these children in spite of X-ray evidence of tuberculosis of the mediastinum. It is possible that such tuberculous infection of the lymph-adenoid tissue in the throat, if not complicated with frequent secondary infection, is of value from the point of view of immunity. *2:* When tubercles are found in the tonsil, it is needless to become unduly excited, because the infection is already widespread in the cervical, mediastinal, and probably the mesenteric lymph nodes. *3:* In such cases, the removal of tonsils and adenoids is of value in that it reduces the secondary infection, but there is no evidence that by operation on the throat one can remove the only tuberculous focus in the body. *4:* Tuberculosis of the tonsils or adenoids is never recognizable from the gross appearance before operation unless there are superficial ulcerations secondary to an open pulmonary lesion; and when the lesion is discovered microscopically it is probably not advisable to stigmatize the patient as tuberculous or seriously to interfere with his ordinary routine duties, since the majority of such patients will probably never have clinical symptoms of the disease.—*Tuberculosis of the Tonsils and Adenoids: a Clinical and Roentgen-ray Study of Fifty Cases Observed for Five Years after Operation, P. B. MacCready and S. J. Crowe, Am. J. Dis. Child., February, 1924, xxvii, 113.*—(*P. J. W.*)

Incidence of Tuberculosis of Cervical Lymph Nodes in Japan.— The incidence of tuberculosis of the cervical lymph nodes during a period of two years and nine months in the Outpatient Departmtnt of the Kei-O University Hospital was determined. The total number of cases was 661, of which 268 were males and 393 females. The incidence was greatest during the ages 15 to 30 years and especially great at 20 and 22 years. The incidence of pulmonary cases almost agreed with these figures. It is believed that the early diagnosis of pulmonary involvement by means of the X-ray is important in preventing the spread of tuberculosis.—*On the Age and Tuberculosis of the Lymphatic Glands of the Neck, M. Ikeda,*

Tokyo Iji Shinshi, January, 1924, no. 2353, Abstract from Japan Med. World, March, 1924, iv, 70.—(M. M.)

Touching for King's Evil.—The very curious custom of the sovereign "touching" those afflicted with scrofula, or the King's Evil, with a view to their cure, was continued in England until the time of Queen Anne. Edward the Confessor (1042–1066) is credited with being the first to possess or at least to exercise this power. The custom was also prevalent in other countries. In France we are told that the power was conferred by direct gift from heaven upon Clovis, the first Christian king, "upon his being anointed with Holy Chrism from which he and his successors obtained the title of Most Christian and with it the power of healing scrofula." The disease known as the King's Evil was different in different countries. Among the Romans it was jaundice. This custom of "touching" has its counterpart in prehistoric times when the king was the very truth, a divine being; he was a god, a man-god, and anyone who interfered with him or his was in deadly peril. At the present day among savage tribes similar powers are attributed to the chiefs. It is of interest to observe the method of cure in England. The fingers were dipped in water and then the neck was stroked with wet fingers. The use of water to anoint the sores seems to be an evolution from that of saliva which was used by Vespasian and others, which use is almost certainly aboriginal. The ceremony was a religious one, accompanied by prayers and each one "touched" was given a coin or sum of money. Later the office was printed in the Prayer Book. In 1714 Queen Anne died and the ceremony has not since been performed by a sovereign.[1] Of the efficacy of the royal touch there is overwhelming evidence, and it is proved as far as such a matter can be proved. The number running into the hundreds of thousands touched alone indicates some success, but this may in part be due to the gold or silver received. But men of the highest standing in the medical profession, from John of Gadsden down, are witnesses who cannot be contemned.—*Touching for the King's Evil, W. R. Riddell, N. Y. Med. J. and Med. Rec. December 5 and 19, 1923, cxviii, 611 and 754.—(B. T. McM.)*

Laryngeal Tuberculosis and Its Treatment.—Therapeutic efforts in laryngeal tuberculosis have been rather disappointing. Those who write most optimistically do not appear to draw a close line between inflammatory conditions complicating tuberculosis and real tuberculous lesions of the larynx. A chronic laryngitis and tracheitis with intense hyperemia is not uncommon. A nonspecific laryngitis leading to superficial loss of epithelium may open the way for infection by tuberculous sputum. When infection is hematogenous or lymphogenous we find, rather, submucous infiltrations which may extend deeply. Another form of lesion is the tuberculoma, resembling the papilloma, its site of predilection being the interarytenoid folds, although it may occur elsewhere. The cockscomb appearance is typical. Such lesions often produce hoarseness, never pain. Pronounced epiglottic infiltration, especially if associated with a perichondritis, is very painful, especially on swallowing, the pain radiating into the ear, as the act of swallowing pulls the epiglottis backward. Such cases usually succumb in three to six months. Another form of lesion is a general armor-like thickening of the mucosa. Nonspecific inflammation is treated by astringents and inhalations, or by change of climate. In the true tuberculous lesions general and climatic treatment and enforced silence are the mainstays. A low dry climate is best. Tuberculin is of doubtful benefit, and Danziger has never seen a local laryngeal reaction. The lactic acid treatment of ulceration has not been successful. Surgical treatment and the electrocautery are contraindicated when there is an active febrile process. Heliotherapy has had some enthusiastic advocates, but has been discontinued in Davos except in the Dutch sanatorium, where Sontjes employs it and believes mild cases react favorably. In Vienna Witte throws artificial light into the larynx while doing suspension laryngoscopy, but does not treat the severe cases. For the intense pain of swallowing Danziger recommends an emulsion of orthoform or propaesin before meals, administered by a Yankauer dropper. In a small group of cases injection of the superior laryngeal nerve with alcohol affords relief. One should always bear in mind the motto of *ne noceri.*—*Laryngeal Tuberculosis and Its Treatment, E. Danziger, N. York M. J. & Med. Rec., June 4, 1924, cxix, 556.—(A. P.)*

Caution in Use of Cautery for Tuberculous Laryngitis.—A patient had a large ulcerated area of tuberculosis on the posterior laryngeal wall and glottis. The area was curetted with a cautery with the result that the scarring of the vocal cords became so extreme as to necessitate a tracheotomy five days after the operation. It is believed that the heat was responsible for the unfortunate result, as excision of numerous similar tuberculous lesions has produced no such unfortunate sequellae. Operators should guard especially against the heating of the normal tissue in the neighborhood of the lesion if the cautery is to be used.—*Vorsicht bei Eingriffen an der tuberkulosen hin-*

[1] It will be remembered that Doctor Johnson was touched by Queen Anne.—*Ed.*

tern Larynxwand, Boenninghaus, Deutsche med. Wchnschr., March 14, 1924, l, 339.—(H. S. W.)

Tuberculous Laryngitis and Pregnancy.—The author, who is a laryngologist, does not believe with Schweitzer that cases of pregnancy with tuberculous laryngitis are hopeless and should have the pregnancy terminated. Every laryngologist can separate the favorable from the unfavorable cases. A case was seen in an advanced stage of pregnancy with a typical tuberculous lesion on the posterior laryngeal wall producing complete hoarseness which entirely disappeared after delivery.—*Tuberkulose und Gravidität, A. Barth, Centralbl. f. Gyn., October, 1922, xlvi, 1686.—(H. J. C.)*

Tuberculosis of Breast.—One of the most remarkable facts in the study of primary pulmonary tuberculosis is the extreme rarity of tuberculous mastitis. The breast tissue seems to be almost immune to attack by the human type of tubercle bacilli. Over a period of thirty years the author has met with only seven cases of proved tuberculous mastitis—four in the female and three in the male. In three of these cases animal inoculation was done and typical bovine cultures were obtained in every instance. According to Cornet, the infection rarely enters through the ducts of the glands; more often the bacilli enter by an excoriation and are conveyed by the lymphatics which accompany the galactic ducts. The infection, which is almost always unilateral, is followed by abscess formation with resulting sinuses. *General conclusions:* 1. Tuberculosis of the breast is always caused by the bovine bacillus. 2. It is never primary, but is the result of lymphatic extension from the glands of the neck or axilla (excepting the rare cases of general miliary infection). 3. In common with all other forms of surgical tuberculosis caused by the bovine bacillus it responds readily to treatment by a tubercle vaccine prepared from an attenuated culture of human tubercle bacilli. The treatment must, however, be continued for a long period until an active immunity is established.—*Tuberculosis of the Breast, N. Raw, Brit. Med. J., April 12, 1924, 657.—(J. S. W.)*

Hemorrhagic Pleurisy.—Hemorrhagic pleurisies constitute quite a rare variety of pleural effusions. Clinical examination rarely anticipates their nature, which is only revealed by exploratory puncture. A case is reported in a man of 40 who complained of shortness of breath and loss of strength, with some cough and pain in the left lower axilla. He had a history of being gassed during the war, but not severely, and his sputum had been examined several times without finding tubercle bacilli. On admission he was very dyspneic and orthopneic, had fever to 39°C. and definite signs of a left pleural effusion, with slight heart displacement, corroborated by radiogram. Exploratory puncture in the ninth interspace showed a hemorrhagic fluid. The dyspnea and heart displacement caused an immediate thoracentesis to be done. There are to be considered three principal groups of cases showing hemorrhagic effusion: (1) cancerous pleurisy, or pleural carcinosis, often secondary to breast cancer, usually painful, and developing rapidly; (2) pleurisy complicating pulmonary tuberculosis of an active ulcerocaseous type, with tubercle bacilli in the sputum, the process evidently spreading from the lung parenchyma and causing ulceration of vessels near the pleura, a sort of pleural hemoptysis; and (3) primary pleural tuberculosis, retrogressing after puncture, and finally becoming cured. As the bleeding and clotting-time of the blood were normal, also the fragility of the red cells, a purely local cause of the bleeding must be sought. The fragility of the red cells found in the effusion, however, was much increased, possibly due to the action of the exudate. It is also known that pleural and peritoneal exudates have ordinarily but low virulence for inoculated animals, although that of meningeal fluids is generally high. It is possible that the exudate protects the body, being charged with bodies or substances lethal to the bacillus; practically, however, puncture seems to benefit the patients. Whatever the cause, primary hemorrhagic pleural tuberculosis, of which this case seems to be an example, has a relatively good prognosis. Suppuration does not occur, serofibrinous transformation usually takes place, the exudate ceases to form after several punctures, and gradually a drying up of the effusion with final cure occurs.—*Les pleurésies hémorrhagiques, Chaufford, Prog. Méd., May 31, 1924, no. 22, 330.—(A. P.)*

Pulmonary Tuberculosis and Miner's Phthisis.—Routine physical examinations are done at regular intervals upon all miners (Europeans, not natives) in the Rand. During the year July, 1921, to July, 1922, 282 cases were admitted to the hospital for special observation, "to clear up doubt as to the existence of a pulmonary tuberculous infection." Of these, 76 were found to have pulmonary tuberculosis: 16 (5.6 per cent) uncomplicated and 63 complicated by the presence of silicosis. The percentage of uncomplicated tuberculosis is becoming materially lessened, as the figure since 1916 has reached as high as 12.7 per cent and has never been lower than 8.0 per cent. Since 1916, 9,945 men (Europeans) have passed the initial examination: of these, 4,798 have been employed as miners. None of the latter has developed silicosis in any form and only 7 have developed pulmonary tuberculo-

sis. During this fiscal year (1921–1922) 13,457 working miners have had periodical examinations, and of these 22 were found to have simple tuberculosis (without silicosis). This is a *prevalence rate* of 163 per 100,000. These 22 developed their tuberculosis during the year; the *attack rate* is also 163 per 100,000. The subsequent history of new cases of simple tuberculosis (since 1916) shows that (1) of 154 working miners who have developed the disease 26 (16.8 per cent) died within a year of its onset; (2) of 110 of the same men, 28 (25 per cent) had died by the end of the second year; (3) of 71, 23 (32.3 per cent) had died by the end of the third year; and (4) of 35, 15 (42.8 per cent) had died by the end of the fourth year. The lungs of 17 cases of tuberculosis uncomplicated by silicosis have been examined, and of these 9 show silicotic changes (either general, though slight, or localized about the tuberculous lesion). An occasional case (2 so far) of simple tuberculosis develops signs (X-ray) of silicosis a few months after the onset of the tuberculosis. Of the 13,457 working miners mentioned, simple silicosis (without tuberculosis) was discovered or had been previously discovered in 434 instances; a very large majority (359) were in the very earliest (ante-primary) stage. The average duration of actual employment in scheduled mines antecedent to the first appearance of the silicosis was 115 months. In the same 13,457 working miners examined during this period under review, there were 24 cases of silicosis with tuberculosis. The average age of these was 41.3 years: the average period of service in the mines was 108 months, with an average of 38 month's mining work elsewhere. Since 1916 the *total number* of cases of *tuberculosis with silicosis* has been 377. These fall into two groups: (1) previously silicotic and (2) not previously silicotic. Analysis shows the following: *Previously silicotic:* Of 157 miners who were known to be silicotic before they became tuberculous, 45 (28.6 per cent) had died from their disease by the end of the first year after that in which they had been certified as tuberculosilicotic. Of 155 of the same cases, 76 (49 per cent) had died from their disease and 2 (1.2 per cent) from other causes by the end of the second subsequent year. Of 148 of the same cases, 94 (63.5 per cent) had died from their disease and 2 (1.3 per cent) from other causes by the end of the third subsequent year. Of 79 of the same cases, 58 (73.4 per cent) had died from their disease by the end of the fourth subsequent year. *Not previously silicotic:* Of 120 miners in whom silicosis had not been detected before the appearance of the tuberculosis, 56 (46.6 per cent) had died from their disease by the end of the first year after that of original certification. Of 105 of the same cases, 67 (63.8 per cent) had died from their disease by the end of the second subsequent year. Of 88 of the same cases, 57 (64.7 per cent) had died from their disease by the end of the third subsequent year. Of 37 of the same cases, 30 (81.0 per cent) had died from their disease by the end of the fourth subsequent year. Examinations (July, 1921, to July, 1922) of non-European miners and native laborers suspected to be suffering from silicosis, tuberculosis or both, resulted as follows: (1) silicosis not present in 1,005 cases (80.21 per cent of the total); (2) silicosis, with or without tuberculosis, present in 248 cases (19.79 per cent); (3) tuberculosis, with or without silicosis, present in 783 cases (62.49 per cent); (4) mean monthly number of native laborers employed, 160,600. Of 205 autopsies upon native laborers silicosis with tuberculosis was present in 93; silicosis with tuberculosis and lobar pneumonia in 19, tuberculosis alone in 64, other conditions in 29.—*Report upon the Work of the Miner's Phthisis Medical Bureau, for the Twelve Months Ending July 31, 1922, p. 37.*—(*H. S. W.*)

Case of Hilum Pleurisy.—Owing to its rarity this disease is not well-known. An encysted empyema may develop at either side and either before or behind the hilum. If time permits adhesions sufficiently firm to develop, the empyema may remain localized in the hilum region. It may then undergo resolution and be evacuated through the bronchi and be quickly cured; or it may be transformed into an interlobar pleurisy, and may spread to the entire pleural cavity. The true hilum phase is usually short and pleurisy of the hilum region can be diagnosed only by the combination of a careful history and roentgenological studies. If the history is not known the hilum shadow might be attributed to a mediastinal tumor or to limited glandular or pulmonary lesions. The extremely fetid odor of the expectoration recalls pulmonary gangrene; but in pulmonary gangrene the fetid odor precedes expectoration. The patient, with no previous history of tuberculosis, suddenly became ill with headache, chilliness, fever and cough. The illness continued for a week and a sense of coldness in the right back, covering an area of 7 by 16 cm. from the fourth rib downward, was complained of; the temperature reached 104°. After prolonged coughing, about 2 ounces of fetid pus were evacuated, and for the next few days thick fetid pus was coughed up at intervals; the temperature dropped to 100° and continued to fluctuate, going up with a slight chill between evacuations of pus. The patient was confined to bed two weeks and then began to improve. A month later he had a hemorrhage of about 300 cc., and in the next five weeks he had 12 separate hemorrhages, through the largest of which he lost about 600 cc. of blood. He continued to expectorate, and about half a year after the onset of his illness had three more hemorrhages. During the six weeks following, his

expectoration gradually decreased, after which it ceased altogether. He then regained his weight and strength; the X-ray shadow became normal in outline, though somewhat larger than on the opposite side; fibrosis and calcification had apparently taken place. Tubercle bacilli were not found.—*Pleurisy of the Hilum Region, H. Swanberg, Surg. Gyn. & Obstet., 1924, xxxviii, 500.*—(*E. C.*)

Spontaneous Mediastinal Pneumothorax.—In the exudative forms of mediastinal pleurisy there exists a sacculated pleurisy in which the exudate lies mainly in the space between the mediastinal pleura and the mediastinal layer of the pulmonary pleura. A number of cases are reported in which a mediastinal pneumothorax was found by X-ray. Besides outspoken light bands aside of the aorta, "ring" figures suggest the diagnosis. In apparently unchanged lung areas there are found regular or irregular, sharply outlined figures that surround a barely perceptible lighter area, and frequently lead to a diagnosis of cavities. In evaluating a roentgenograph suggesting spontaneous pneumothorax, a displaced trachea need not be diagnostic of a mediastinal pneumothorax, but it is rather the finding of a light band beside the trachea that is significant. The classical findings of a pneumothorax cannot be expected to be present in these cases. Even at postmortem they may escape the notice of the pathologist. Opposite to the partial spontaneous pneumothorax difficult of determination, the mediastinal type is more easily observed roentgenologically since its paramediastinal location during dorsoventral X-raying reveals a light band.—*Die spontane mediastinale Pneumothorax, F. Fleischner, Beitr. z. Klin. d. Tuberk., April, 1923, lv, 51.*—(*H. J. C.*)

Cardiac Conditions Accompanying Pulmonary Tuberculosis.—Grau believed that mitral stenosis, with or without insufficiency, is more rarely combined with pulmonary tuberculosis than are other cardiac conditions; that mitral insufficiency carries with it a certain degree of protection against tuberculosis when there is brown induration of the lung as a result of stasis; that the advance of an existing tuberculosis is little influenced by cardiac failure; and that the more rapidly a tuberculosis progresses the more favorably does it act on the compensation of a cardiac failure, and is thus similar to any severe nutritive disturbance. Burns found 228 (17.5 per cent) cardiac failures among 1,300 advanced cases of pulmonary tuberculosis. Kellner only rarely found mitral insufficiency as a complication. He does not believe that it has a favorable influence on the tuberculosis. Ferranini points out the mild course of tuberculosis with mitral insufficiency. In all cardiac cases that acquire tuberculosis the heart never atrophies. Lawrason Brown, Kutty, Grau and Bohland agree that pulmonary stenosis, in the majority of cases, terminates with pulmonary tuberculosis. Calthrop found that of 1,097 cases afflicted with pulmonary tuberculosis, cardiac insufficiency, or both, 713 had tuberculosis alone, 377 cardiac insufficiency alone, and 29 had both diseases. Of the 29, 15 had mitral insufficiency and 9 combined mitral and aortic insufficiency. Mitral insufficiency was not an absolute protection against tuberculosis. Pottenger holds that the small heart in pulmonary tuberculosis is due to an adaptation to changed respiratory conditions. Pleuritic adhesions and infiltration of the lung tissue, occurring early in tuberculosis, impede the expansion of the chest and cause a decrease in the size of the heart and arteries, as well as a relative arterial anemia. In opposition to these views are the orthodiagraphic findings of Beck. He found in even those cases that were not narrow or small-chested (although not constantly) a small heart, which he believes is a secondary expression of the tuberculous process. Guarini differentiates two types;—the median, small and the drop heart. Both are hypoplastic and based on intrauterine developmental factors. Atrophic conditions have nothing to do with the condition. The median heart and drop heart are found in the tuberculous and those predisposed to it. Radiology discloses the condition, and this finding is a valuable aid in the prognosis and diagnosis of pulmonary tuberculosis. Boas believes the heart to be of normal size in phthisis. Its smallness goes hand in hand with decrease of bodily musculature. The asthenic habitus plays a rôle but not a predisposing one. Mayer determined the size of the heart by the volumetric method of Brugsch. In marked emaciation the heart was small. The narrow-chested type occurred in most cases of tuberculosis. The relation of constitution and tuberculosis is difficult to establish. The hypoplastic heart is to be evaluated differently from the small heart. Schulte-Tigges considers the view of Brehmer, that the small heart is seen in many cases of pulmonary tuberculosis, to be correct; whether the small heart is primary or a secondary effect can probably be differentiated in that the hypoplastic as well as the atrophic heart can occur; the orthodiagraphic findings are not verified. A common finding in chronic pulmonary tuberculosis is hypertrophy of the right ventricle with epigastric pulsation and accentuation of the second pulmonic sound. Boas and Mann found, on examination of 97 cases of pulmonary tuberculosis by electrocardiagraphic methods, that in 29 per cent the right, in 30 per cent the left, ventricle was more hypertrophied, and in 41 per cent no difference could be noted. Right hypertrophy predominated in young people

and in males. Czczekanski and Sabat noted in dogs no hypertrophy after artificial pneumothorax. The changes in heart location due to adhesions, contractions, pneumothorax, etc., are considered as well as the pulse and blood pressure, but no new views of consequence are presented. Their effect on prognosis is also discussed. Maclachlan found tuberculosis of the heart definitely 10 times among 1,000 autopsies and believes that this must be considered to be present in active tuberculosis to the extent of 5 per cent, mostly as exudative pericarditis. Weiss found 82 cases of tuberculous pericarditis among 1,780 cases of tuberculosis, and in 5 of these the heart musculature was involved. Wolff studied 21 cases of tuberculous pericarditis histologically. Cardiac symptoms are common without clinical findings and are attributable to extrapericardial adhesions. In inspiration the cardiac line flattens, and in sternal adhesions the heart permanently lodges anteriorly in the roentgen plate while the inspiratory lighting of the anterior mediastinum is lacking. Adhesions to the posterior mediastinum result in the "spinal-column stationary heart" (Schütze). Hansen, Weill and Loiseleur recommend for treatment pneumopericardium with previous withdrawal of the exudate. Jakob used pericardotomy in a case with good results. Brauer recommends absolute body rest, with local icebags and sedatives in dry pericarditis. In exudative pericarditis severe physical or sweating methods are to be avoided on account of the danger of cardiac collapse. Tuberculous myocarditis is rare according to Niemeyer. The origin and types are described in man and animals. Heller, Sorgo and Suess found tubercle bacilli in endocardial vegetations. According to Landouzy and Gougerot tuberculous endocarditis is more common than is believed. Intimal tuberculosis in the arteries is rare. Tuberculosis of the aorta appears in four forms: (1) miliary tuberculosis of the intima, (2) polyps on the intima, (3) tuberculosis of the arterial walls in their various layers, and (4) aneurysms with tuberculous walls. The first is the commonest, alone or combined with the others (Haythorn). Various interesting cases are cited from the literature. In animal experiments only 3 tuberculous dogs of hundreds examined had tuberculosis of the aorta. Bernard and Solomon found in dogs tuberculosis of the endocardium, myocardium and pericardium besides of the aorta, following injection of bacilli into the left ventricle.—*Ergebnisse oder Übersichtsberichte. Die beziehungen des Herzens und der Gefässe zur Lungentuberkulose und ihre tuberkulösen Erkrankungen, H. Schulte-Tigges, Centralbl. f. d. ges. Tuberk.-Forsch., December, 1923, xxi, 161.*—(*H. J. C.*)

Congenital Heart Disease with Pulmonary Tuberculosis.—A case of pulmonary tuberculosis, associated with grave congenital cardiac defects is described. The patient, aged 28, had shown evidences of cardiac disease since birth. The face, lips, ears and fingers displayed the characteristic lividity. There was no marked dyspnea at rest. There was definite evidence of pulmonary tuberculosis and tubercle bacilli were present in the sputum. Death occurred, following syncope, a few days after admission to the sanatorium. On postmortem, both lungs showed marked venous congestion as well as small cavities and scattered tubercles. The heart showed: (1) marked stenosis of the pulmonary artery through the close adhesion of the semilunar valves, (2) the occurrence of the rarer warty form of endocarditis affecting the adherent pulmonic valves and (3) marked patency of the foramen ovale.—*A Case of Congenital Cardiac Malformation with Pulmonary Tuberculosis, T. Campbell, Lancet, May 17, 1924, ccvi, 1001.*—(*J. S. W.*)

Tuberculous Myocarditis with Stokes-Adams Syndrome.—A striking case of Stokes-Adams syndrome due to tuberculous involvement of the myocardium is here described. The first attack occurred twenty months before the patient was seen by the authors, and there were three further attacks in the interval. Electrocardiogram confirmed the diagnosis. Autopsy showed in brief the following: There was no pericarditis, but the myocardium, on the other hand, showed an extensive tuberculous infiltration with nodule formation and sclerosis. The posterior wall of the left ventricle, and the septum, particularly the region of the bundle of Hiss, showed very marked lesions, almost the whole thickness of the wall being involved in places. The lungs showed old lesions at the apices and caseation of some of the tracheobronchial nodes. There was also tuberculosis in the hepatogastric and retropancreatic nodes. A résumé of the literature on tuberculous myocarditis is given. The conclusion is drawn that there is no way of diagnosing this condition during life, although one may suspect its presence if there are signs of a myocardial affection with no explanation except a possible tuberculosis. It is thought that this form of infection is often lymph-borne, since there is always an accompanying tuberculosis of the tracheobronchial nodes, and as these nodes drain the cardiac lymphatics, the infection may well be a retrograde affair. To the objection that the tracheobronchial nodes are very frequently found involved and the myocardium very seldom, the authors reply that tuberculosis of the myocardium is much more frequent than generally supposed, but manifests itself in the ordinary chronic form. Recent findings of tubercle bacilli in such common myocardial lesions would confirm this hypothesis.—*Myocardite tuberculeuse avec syndrome*

d'Adams-Stokes, P. Meyer and C. Oberling, Ann. d. Méd., Par., November, 1923, xiv, no. 5, 368.—(W. B. S.)

Tuberculosis of Thymus and Myocardium.—Tuberculosis of the myocardium appears in three types: *1:* Tubercles, single or multiple, from pea to goose-egg size which may project beneath the endocardium or pericardium or be buried within the myocardium. In the majority of cases, they consist of firm, whitish masses with caseous centres. *2:* The miliary variety, in which grayish semitransparent masses project as minute elevations beneath the endocardium. These occur most commonly on the ventricular wall. *3:* The diffuse form of tuberculous infiltration, which consists of a more or less general diffuse tuberculous infiltration of the myocardium and is usually seen in connection with tuberculosis of the pericardium. Tuberculosis of the myocardium most frequently occurs in the right ventricle, next in frequency in the right auricle, with but few cases occurring in the left side. Tuberculosis of the thymus is rare. It is usually caseous and secondary to tuberculosis of hilum lymph nodes or lungs. In some cases only one lobe is involved. An autopsy report of a case of a child, eight months old, a negro male, is given. The heart weighed 35 grams. The pericardial cavity contained about 5 cc. of clear straw-colored fluid. The parietal and visceral layers were smooth and glistening. The coronary vessels were distended with blood. On section there was found a greyish white nodule in the left ventricular wall, measuring 4 mm. in diameter, firm in consistence. There was a large greyish white nodule projecting into the right ventricle which occupied the space of the middle segment of the tricuspid valve. The thymus was large and firm. On section it consisted of large nodules which were irregular in outline and occupied practically all of the thymic tissue. The lobulations could be made out. The centre of the nodule in the thymus was soft. The hilum lymph node on the right side, measuring 1.5 cm., was of a yellowish white color, and on section contained soft caseous material. *Anatomic diagnosis:* Disseminated tuberculosis; caseous tuberculosis of lungs and mediastinal lymph nodes; tuberculosis of intestine and mesenteric lymph nodes; tuberculosis of ventricular wall, left and middle segment of tricuspid valve; tuberculosis of liver, spleen, adrenals, kidneys, testes and thymus; tuberculosis of dura, brain, and skull bones, ribs and vertebrae. The long bones also showed involvement.—*Disseminated Tuberculosis, Caseous Tuberculosis of the Thymus and Myocardium, Med. Jour. & Rec., W. C. Carson, March 19, 1924, cxix, 281.—(B. T. McM.)*

Endocarditis in Tuberculosis.—Although it is universally recognized that cardiac affections rarely complicate pulmonary tuberculosis, as a terminal process endocarditis is not unknown. A case of bacterial endocarditis complicating pulmonary tuberculosis is reported. The patient, a male, aged 30, three and one-half years after his discharge from a sanatorium as an apparently arrested case, was readmitted on account of a supposed reactivation of his tuberculous process. However, there was no increase in the amount of lung involvement and there was no evidence of tuberculous complications. The chief complaints on readmission were fever, septic in character, with an afternoon range of between 102° and 104°, pain over the chest and particularly over the sternum, and marked dyspnea. Physical examination disclosed a systolic murmur best heard at the apex and transmitted to the axilla, also some pulmonary emphysema. The fingers were slightly clubbed. The dyspnea grew progressively worse and the tenderness over the precordium and sternum became marked. The sputum only occasionally contained tubercle bacilli. The urine showed a faint trace of albumen with an occasional cast. Two weeks after admission the patient complained of a very severe and boring pain in the right hip joint. This was not accompanied by tenderness on pressure or motion. A lumbar puncture was negative. Blood culture showed streptococcus anhemolyticus. The patient died one month after admission, and shortly before death edema of the legs and swelling of the face were noted. There was also an extensive petechial eruption on the forehead, face and legs which later spread all over the body, An autopsy was not performed although a postmortem roentgenographic examination of the chest disclosed a very large, apparently dilated heart with moderate hydrothorax on the right. The tuberculous lung process was apparently unchanged. The hip pain was interpreted as a result of an embolus, secondary to endocarditis.—*Subacute Bacterial Endocarditis Complicating Pulmonary Tuberculosis, B. P. Stivelman, Med. Jour. & Rec., July 2, 1924, cxx, v.—(J. S. W.)*

Tuberculosis of Duodenum.—Tuberculosis of the stomach is seen exceptionally with anacidity, but tuberculosis of the duodenum is never seen. In the case reported anacidity was absent. The bean-sized submucous tuberculoma was located on the anterior wall of the *pars horizontalis*, in the neighborhood of the spinal column, pancreas and angle of the liver. For years the patient had gastric pains and during the past half-year had lost 25 pounds; recently there were severe pains and symptoms of retention. Roentgen examination revealed definite steno-

sis, increased peristalsis of the stomach, and deformity of the bulbus duodeni without insufficiency of the pylorus.—*Tuberkulom des Bulbus duodeni, H. Klose, Centralbl. f. Chir., May, 1923, l, 756.*—(*H. J. C.*)

Tuberculous Abscess of Liver.—A case of widespread tuberculous abscess formation in the liver is described. This finding is rare. Only a few cases in the literature are beyond criticism as to the etiology. In this case, which is noteworthy in that caseation was lacking, the diagnosis was made on histological findings, and especially on the presence of tubercle bacilli in giant cells.—*Über den tuberkulösen Abscess der Leber, W. Gerlach, Ztschr. f. Tuberk., May, 1923, xxxviii, 161.*—(*H. J. C.*)

Tuberculous Lesions of Liver.—The functions of this vast organ are multiple and it reacts to all pathological alterations of the body. Among the most important are disorders of metabolism, intoxications, and circulatory disturbances. It is also exposed to infections. Its reactions to tuberculous infection are most interesting. Tubercle bacilli are especially rich in fatty substances and a toxicogenic destruction of histoproteins is one of its characteristic actions. The elimination of nitrogen, of organic phosphorus, of neutral sulphur, and of creatin, is augmented; albumosuria is the rule. Locally, caseation occurs, accompanied by accumulation of fatty substances, and amyloid degeneration is frequent. Primary tuberculosis of the liver is rare, but secondary invasion frequent, probably occurring usually by the hematogenous route, but sometimes being disseminated by way of the biliary tract, a periangiocholitis being set up. Solitary tubercle occurs rarely, and sometimes a diffuse parenchymatous hepatitis. The hepatic reaction may consist of a nodular or diffuse fatty infiltration, amyloidosis, or perhaps sclerosis. This cirrhosis is less atrophic than that of Laennec.—*Les lésions tuberculeuses du foie, A. Dustin, Rev. Belge d. l. Tuberc., February, 1924, no. 2, 83.*—(*A. P.*)

Alleged Anergy in Tuberculosis with Hepatic Complications.—The author takes exception to the conclusions of Fiessinger and Brodin as stated in their paper on *Hepatic Anergy in Tuberculosis*, an abstract of which was published in the AMERICAN REVIEW OF TUBERCULOSIS during the past year. In the first place, Daniello contends that icterus *per se* will render the cutireaction negative or very weak and that, therefore, one is not justified in concluding that anergy exists just because the cutireaction is negative in an icteric skin. With various sorts of well-marked clinical icterus the Pirquet test was found negative quite often, while the subicteric, on the contrary, gave fairly clean-cut positive results. In another group of cases with toxic icterus following neosalvarsan the intensity of the cutireaction seemed to vary inversely with the intensity of the jaundice. In seven cases in which the cutireaction was either negative or weak, the puncture reaction was tried and gave a markedly positive result in 4 cases. This fact would indicate that the negative cutireaction in this group of cases was not really a matter of anergy. In the second group studied, namely, cases of tuberculosis complicated by hepatitis and free from jaundice, it was found that chronic liver alterations aggravate tuberculosis; but this aggravation is not a specific affair nor a matter of sudden suppression of an existing allergy. The latter diminishes gradually to terminal anergy in proportion as the tuberculosis spreads and the insufficient liver is unable to cope with waste products.—*Contribution à l'étude des prétendus états anergiques observés chez les hépatiques tuberculeux, Léon Daniello, Ann. d. Méd., March, 1924, xv, 268.*—(*W. B. S.*)

Tuberculous Hepatic Cirrhosis.—Two cases of tuberculous hepatic cirrhosis occurring in miliary tuberculosis are described with postmortem and histological findings.—*On the Cirrhotic Changes of the Liver, Associated with Miliary Tuberculosis, So-called Tuberculous Hepatic Cirrhosis, T. Kimura and Y. Wada, Seii-Kwai Zasshi, June, 1923, xlii, no. 3, Abstract from Japan Med. World, February, 1924, iv, 41.*—(*M. M.*)

Tuberculosis and Typhoid Fever.—Several cases of what Landouzy terms *typho-bacillose*, or tuberculosis simulating typhoid fever, came under the author's observation and stimulated him to study the matter more closely. The following subjects are discussed and cases in point are given in some detail: (1) pleuropulmonary, lymph-node, and bone and joint tuberculosis of typhoid form; (2) the occurrence of typhoid fever and pulmonary tuberculosis in association; and (3) pulmonary syndromes simulating tuberculosis in the course of typhoid fever. Conclusions are drawn as follows: 1. In cases resembling typhoid fever all laboratory tests should immediately be employed to establish the diagnosis of typhoid. If these tests are definitely negative, tubercle bacilli should be painstakingly sought in the sputum, no matter how little there may be. 2. In this way various forms of tuberculosis, pulmonary and pleural, lymph node and osteoarticular, may be detected in their typhoidal form of onset. 3. Cases of actual typhoid fever occurring to complicate pulmonary tuberculosis are rare. Typhoid disease does not seem to produce anergy toward tuberculosis. In the author's experience positive skin reactions to tuberculin were not modified by the presence of typhoid fever. Also in one case of artificial

pneumothorax complicated by typhoid fever the positive skin reaction was not affected.—*Tuberculose et fièvre typhoide, A. Pellé, Ann. d. Méd., May, 1924, xv, 411.*—(*W. B. S.*)

Tuberculosis of Spleen.—There are several clinical types of splenomegaly, the proper recognition of which demands the most delicate refinements in diagnostic skill. In most instances it is the blood examination that has given the greatest assurance in discriminating between these clinical types. However, most of the predominant symptoms of splenomegaly are inconstant and variable, as the following case history would indicate: A male, age 50, was first seen in September, 1923, for advice relative to a large tumor in the left side of his belly. During January, 1923, he had suffered with severe constant pain in his back, extending from his shoulder to his buttocks, and most severe at night. The pain lasted for six months, gradually ceasing and disappearing. He was treated for rheumatism. In June a pain in the pit of the stomach manifested itself, lasting for six weeks, when it shifted to the left side immediately under the short ribs. The pain was described as severe, heavy and dull in character. These symptoms were accompanied by loss of strength and weight (40 lbs.), although there was no loss of appetite or any digestive disturbance. The swelling on the left side was first noted in August. This increased in size rapidly. When seen in September the patient was emaciated and weak and the color of his skin, which was dry, was sallow and dusky. The Wassermann reaction and urinalysis were negative, and the blood examination showed an almost normal picture. Despite his weakness his appetite was good and his sleep refreshing. At times he raised a small amount of sputum which was negative for tubercle bacilli. There was much thirst. Examination showed no nodular enlargement about the neck, axilla and groin. Sufficient fluid was present in the abdomen to impart a well marked tenseness to the belly wall, which was not tender on pressure. There could be palpated a tumor which filled the greater part of the left abdominal cavity. A diagnosis of primitive splenomegaly would have been made but for the fact that a rectal examination was provocative of excruciating pain whenever the tip of the examining finger came in close proximity with the left iliac fossa. There was apparently no lesion in the rectum. A provisional diagnosis of tuberculosis or possible malignant tumor of the spleen was then made. An exploratory operation revealed a much enlarged spleen that almost filled the left side of the abdominal cavity. There were no serious adhesions and its surface was smooth and showed irregular light brown patches. Gentle pressure imparted the sensation of numerous small kernels imbedded in its substance immediately under the capsule. The ascitic fluid was of a pale straw color. The iliac nodes were found to be much enlarged. In fact, a veritable roll of enlarged nodes could be traced upward to the diaphragm. Many of these nodes were as large as robins' eggs, and were firm to the touch. The nodes on the under surface of the liver, those at the hilum of the spleen, and particularly the mesenteric nodes were markedly enlarged. No irregularities indicative of ulceration of the bowel could be detected. The liver was somewhat pale and the anterior border was well rounded. The gross lesions in the abdominal cavity were sufficiently clear to establish a diagnosis of tuberculous disease of the spleen. Whether the splenomegaly was of primary or secondary origin was not determined. On account of the extent of the lymphatic involvement the spleen was not removed. The patient was in the hospital three weeks after the operation. At no time were there any untoward symptoms, although twelve days after the operation the patient had a violent attack of coughing which caused the wound to burst open. Eight weeks after the operation he was feeling much beter, was entirely free from pain, felt stronger and had gained five pounds. The spleen had receded to a perceptible degree. In fact, the patient felt so well that he wanted to go to work.—*Tuberculous Disease of the Spleen, F. Reder, Med., J. & Rec., August 6, 1924, cxx, 107.*—(*J. S. W.*)

Tuberculosis of Spleen with Polycythemia and Splenomegaly.—A woman, aged 49, mother of four children, had tuberculosis of the spleen with polycythemia and splenomegaly. The case was observed from January 26, 1917, to September 10, 1923, in four distinct attacks during which the polycythemic state became much aggravated. In three of these exacerbations radium exposures over the spleen with or without the administration of benzine produced a profound improvement in the blood within three months following the use of the radium.—*Tuberculosis of the Spleen with Polycythemia and Splenomegaly Improved by Treatment with Radium and Benzine, G. D. Head, J. Am. M. Ass., July 5, 1924, lxxxiii, 40.*—(*B. T. McM.*)

Tuberculous Peritonitis and Disseminated Carcinoma of Peritoneum.—Tuberculous peritonitis is frequently associated with the development of a palpable mass in the abdomen. This peculiarity together with the great diversity of the other signs and symptoms of peritoneal tuberculosis may occasion considerable difficulty in differentiating tuberculosis from carcinoma of the peritoneum. Gastrointestinal disturbances, emaciation, loss of strength, fever, abdominal discomfort and pain, ascites and presence of tumors are common features of

tuberculous peritonitis, as well as of peritoneal carcinoma. A painstaking inquiry into the history and a careful physical examination will usually be required to determine the primary cause. Young subjects are more apt to have tuberculosis than cancer. A history of a previous attack of ascites with sweats and tachycardia favors tuberculosis. Fever and tachycardia are more common in carcinoma. A gastrointestinal examination may present suggestive evidence. The finding of the Boas-Oppler bacillus with clots of blood in the absence of hydrochloric acid, is almost pathognomonic of cancer. In many instances a definite diagnosis will be impossible without histological examination of a section of tissue removed in the course of exploratory laparotomy. Heliotherapy offers an excellent test for the presence of tuberculosis. In two cases, cited in this paper, of diffuse carcinoma of the peritoneum which came to necropsy, tuberculous peritonitis was the clinical diagnosis, and this was confirmed by a pathological report on a section of omentum, removed in one case during laparotomy. The determination of the existence of a primary focus of tuberculosis should not preclude the possibility of carcinoma existing in the peritoneum. The usual character of the metastasis in these cases is noteworthy.—*Tuberculous Peritonitis and Disseminated Carcinoma of the Peritoneum, R. S. Boles, J. Am. M. Ass., June 23, 1924, lxxxii, 2112.*—(*B. T. McM.*)

Unusual Case of Tuberculous Peritonitis.—A case of peritonitis with chylus-like fluid is described. Careful examination revealed the fluid to be exceptional. The findings in the peritoneum, pleura and pericardium suggested calling the condition "inflammatory tumor-like" degeneration. *The Pathologico-Anatomical Studies on a Case Clinically Diagnosed to be Tuberculous Peritonitis in Special Reference to the Meaning of the Tissues Proliferated Pathologically. H. Kokita, Nihon Biseibutsugakkwai Zasshi, December, 1923, xvii, no. 12, Abstract from Japan Med. World, May, 1924, iv, 125.*—(*M. M.*)

Surgical Tuberculosis.—Spinal caries, or any other bone or joint focus, is an obvious manifestation of a hidden deeply rooted disease. The rival powers of man and the tubercle bacillus seem very delicately balanced. The virulence of the tubercle bacillus in bone and joint diseases is almost invariably constant. Man is the variable factor. In good circumstances he has the upper hand; under sufficiently bad conditions he becomes its prey. Because of the lack of proper follow-up a cure in one hospital register may become a very sick patient in another hospital's bed. The treatment of surgical tuberculosis consists in: *1:* Raising the patient's general vitality as quickly and as fully as possible. *2:* Ultimately restoring the full health of the patient, who should be free from any sign of tuberculosis, focal or general, with the powers of resistance to the tubercle bacillus so raised as to enable him to repel any further attack. *3:* The prompt elimination of any factor, such as strain or movement, harmful to the diseased part and the application, so far as possible, of rest, comfort and stimulus to local circulation. *4:* The avoidance of septic infection. *5:* The restoration of the strength and function of the affected part. These points are best achieved by prompt admission of the patients to an open-air orthopedic hospital. The virtues of sunlight and moving air should not induce us to relinquish the accuracy of our splinting. General treatment comprises the skilled use of four great natural remedies: rest, good feeding, open air and sufficient time. *Action of the sun:* Ultraviolet rays are stopped in the outer layers of skin; in large doses they destroy bacteria on the surface and epidermal cells; in smaller doses they stimulate the cells and tend to produce pigmentation. The sun's rays, as their wave-length increases from violet toward red, gradually lose photochemical activity, but gain in penetration and heating power. The free use of the sun's light without protection, or its heat without associated cooling is wholly bad. Sun and air act together, but the sun has been given all the credit. The first step in heliotherapy is the carefully graduated exposure of the body in order to develop pigment; and, until and unless pigment is developed, only a small dose can be tolerated and more than a small dose is definitely harmful. Pigmentation, so far as is known, is definitely and merely a protection of the deeper layers of the skin and underlying tissues from the photochemical effect of sunlight. Sunlight contains both light and heat. A good skin takes prompt steps to stop the light as near the surface as possible. This is exemplified in the highest degree in the negro. In fact, the better the skin and the more acclimatized the race, the more effective the barrier. The more completely photochemical activity is cut out, the better the patient responds to heliotherapy. Neither sun nor wind can be used to the best advantage without the other. Together they work in ways far beyond direct heliotherapy as a source of health and vigor. The skin is our first line of defence against invasion of the body, and it is so effective in resisting bacteria that its efficiency is often forgotten. Sun and wind may give the skin useful hints, but it is the skin which interprets them to our advantage. In the local treatment of affected parts three stages can be distinguished: (1) active stage, treated by rest, enforced and uninterrupted, (2) stage of healing—comparative immobilization; and (3) stage of free use, under careful supervision. For children under 16, formal operations are seldom if ever warranted, but in adults when disease is advanced and a stiff

joint is the best that can be hoped for, an excision will give a healed strong painless limb more quickly, more certainly, and of sounder stability, than conservative measures, and more safely. To open and drain a cold abscess is to commit a surgical crime. —*Treatment of Tuberculosis of Bones and Joints, S. C. Girdlestone, Brit. M. J., June 14, 1924, no. 3311, 1044.*—(*B. T. McM.*)

Surgical Tuberculosis in Egypt.—The incidence of bone and joint and lymph node tuberculosis in Egypt differs essentially from that in England to-day. Among the fellaheen or country people and also among the urban population of Egypt, the flat bones of the skull and face, the sternum, scapulae and ribs, the spine and ilium, and the small bones of the hands and feet, are chiefly affected. The long bones and the big bones are not so commonly involved. The sheep and the goat, the common sources of the poor man's meat supply, are not susceptible to tubercle in Egypt. Tuberculosis in general and surgical tuberculosis in particular is the greatest scourge in the whole country. Among the poor urban population of Egypt the death rate is 80 per cent in the case of gross tuberculous disease of bone with abscess and mixed infection. The course of the disease is very rapid; quick abscess formation and marked deformity are the rule. As a rule the disease takes about 18 months to kill, and the end is usually from an infective diarrhea. Meningitis is comparatively rare as a terminal manifestation of the disease. *Conclusions:* 1. Tuberculosis, both general and surgical, is very greatly on the increase in Egypt. 2. The type and incidence of surgical tuberculosis in the flat bones rather than in the classical long bones and joints suggest that we have here a recrudescence of the disease in a community that has lost its acquired immunity. 3. The study of Predynastic, Dynastic and Ptolemaic bones, extending to a period as far back as 3000 B. C., proved that surgical tuberculosis was a disease of frequent incidence in those times. It also suggests that the type of disease affecting the flat bones developed when periods of urban civilization succeeded periods of almost purely agricultural life in Egypt. Maceration and softening of mumified tissues, which have been so successful in demonstrating certain infectious bacteria, in Predynastic bodies, have not yet demonstrated the tubercle bacillus. Work on this subject is still proceeding. 4. The meat and milk supply of the poor in Egypt is obtained almost entirely from nontuberculous sources, such as the buffalo and goat, which are relatively immune to tubercle. 5. Avian tuberculosis is probably a contributory cause of the incidence and development of this disease among the poor in Egypt. 6. The development of the two-stage method of performing Albee's operation of bone grafting of the spine allows this procedure to be adopted even in young children.—*Surgical Tuberculosis in Egypt, R. V. Dolbey and A. W. Mooro, Lancet, June 1, 1924, ccvi, 1153.*—(*B. T. McM.*)

Tuberculin Skin Reaction in Surgical Tuberculosis.—The readiness with which city physicians advise the placing of children in poor general condition at the seashore is noted, and the generally favorable effect of the climate; however, certain institutions, such as the Marine Sanatorium at Breedene, are designed only for the tuberculous, and the making of such a diagnosis is often most unexpected and sad for the family. Therefore, it should be made with as great precision as possible. The skin reaction, sometimes too much favored, again too much decried, will aid in the orientation of the case. There are other establishments for the debilitated, the convalescents, and the rachitic. Certainly the rapid return of a patient diagnosed as suffering from bony, lymphatic, serous, articular, or cutaneous tuberculosis must often cause chagrin; hence the necessity of avoiding premature diagnoses. Numerous affections simulate surgical tuberculosis: pseudo-coxalgias, rheumatism, rickets, syphilis, etc. A negative skin reaction to tuberculin will at once excite suspicion. However, the mere presence of a positive reaction is no proof of the specific nature of a given lesion. The majority of allergic patients have tracheobronchial adenitis, which is sufficient to cause the reaction; in such, one must be on guard for the possible existence of some other disease. As for technique, Pirquet's instrument is employed, three light scarifications being made in the skin of the supinator surface of the forearm, one serving as a control, the others being touched with pure and 50 per cent tuberculin. A negative skin reaction in the case of bone fistulae suggests either chronic septic osteomyelitis or syphilis. Deviations of the vertebral column may also be due to other than tuberculous causes. Coxalgia and hysteria must also be differentiated. The importance of differential diagnosis lies in the different nature of the treatment to be advised or carried out. The Pirquet test is simple and the reactions usually well marked in external tuberculosis; a negative reaction should, therefore, be an indication for accepting with reservations any diagnosis of tuberculosis.—*Valeur pratique de la cuti-réaction dans le diagnostic des tuberculoses chirurgicales, J. Andre, Rev. Belge d. l. Tuberc., April, 1924, no. 4, 125.*—(*A. P.*)

Immunobiological Concepts of Surgical Tuberculosis.—The development of the treatment of surgical tuberculosis is reviewed and the stand of the Cologne surgical clinic sketched. The author's surgical cases revealed that there are different reaction types when tested according to

Deycke-Much. They are differentiated into the "albuminous type" and the "fat type." The former can be an unfavorable reaction type, while the "fat type" are mostly favorable. As soon as a questionable case is definitely proved tuberculosis the Deycke-Much tests are made. At the same time bone and tissue sequestra are removed, provided this can be done without mutilation. Generally, however, a purely conservative therapy is instituted. After 4 to 6 weeks the Deycke-Much inoculation is repeated. If the reaction indicates improvement or at least no turn for the worse, the procedure is kept up unchanged. If the reaction indicates a turn for the worse, that is, the favorable "fat type" changes to an unfavorable "albuminous type," operation is carried out, provided this is feasible. The Deycke-Much method is lauded.—*Immunobiologische Erfassung der Chirurgischen Tuberkulose, W. Drügg, Deutsche. Ztschr. f. Chir., April, 1923, clxxix, 65.*—(*H. J. C.*)

Treatment of Surgical Tuberculosis.—Tuberculosis is not a local disease. Persons with lymph-node tuberculosis are most likely to have a latent tuberculous focus somewhere else in the body and the infection is often influenced by numerous outside factors. Surgical treatment is a part of the general treatment of the tuberculous. Rollier had pointed out the importance of open air and sunlight in the treatment of pulmonary and local tuberculosis. In treatment we must recognize that both general and local measures have a place. The external influence of light lies in the reactive inflammation. There are also, however, deep and constitutional influences which play a rôle in the healing, probably some intracellular chemical change or some change in the serum-protein. The formation of pigment has a part in the healing process, and the intensity of the bronzing is an index of the adequacy of the treatment and the amount of exposure to which the patient should be subjected. Sufficient exposure has usually been had when the local lesions begin to show regressive changes. Röntger-ray therapy is decidedly favorable to early lymph-node tuberculosis but is of no help in the later stages. It is also very helpful in early joint or synovial-membrane tuberculosis. Tuberculin has a place in the therapy of tuberculosis, as also have soft-soap inunctions. As to surgical treatment of local tuberculosis, conservative measures are immobilization by bandaging, producing stasis hyperemia, surgical attention to fistulae and ulcers, resection or amputation in cases of bone or joint disease.—*Der gegenwärtige Stand der Behandlung der chirurgischen Tuberkulose, T. Voeckler, Deutsche med. Wchnschr., January 11, 1924, 1, 50.*—(*H. S. W.*)

Diagnosis of Subacute Tuberculous Osteomyelitis.—Failure to make an X-ray examination often leads to a diagnosis of rheumatism, and treatment by salicylates, in cases of subacute long bone abscess due to staphylococcus aureus, typhoid or tubercle bacillus, or occasionally to other bacteria. Such chronic abscesses are as a rule toward the articular end. Aching in the joint is usually complained of and may be worse when the patient is in bed, owing to the vascular congestion produced by increased warmth. A very early examination may show nothing but local tenderness. Later there is enlargement of the bone which in young patients is usually on the diaphyseal side of the epiphyseal line; the enlargement is generally diffuse, involving the whole circumference. In untreated cases the infection is likely to spread to the periosteum. When the disease is tuberculosis the patient is usually a child or an adolescent; a tuberculous focus may exist for a considerable time without evident thickening of the bone. In later stages there may be an effusion into the joint. If the case is diagnosed before the joint is definitely infected and the tuberculous focus removed without opening the joint the effusion will disappear and the joint recover. If the case is treated expectantly there is danger of tuberculous arthritis and consequent ankylosis. When a central abscess has spread to form a subperiosteal abscess this is sometimes mistakenly regarded as the only lesion present. The X-ray will show the central focus which should already have been suspected from the clinical symptoms; the infection may also have spread through the periosteum into the surrounding muscles before the diagnosis is made. In tuberculous cases, the X-ray will show an ill-defined area of rarefaction on the diaphyseal side of the epiphyseal line. The lack of definition is caused by the rarefaction of the cancellous bone surrounding the focus. The pus of the central abscess is sterile or only slightly virulent, and prolonged drainage is not needed after the abscess is evacuated and granulation tissue removed. The walls of the cavity are chiseled down, so that a shelving wall leads from the surface of the bone to the bottom of the cavity. The cavity is dried, treated with alcohol and *B. I. P. P.* well rubbed into the walls; the skin wound is closed completely and a firm dressing applied. Drainage creates the danger of sinus formation with mixed infection. If operation is done during an acute exacerbation it may be well to drain the cavity for 48 hours to permit serum to escape. In operation on superficial bones the skin incision should be made at a distance from the abscess in order to prevent the danger of sinus formation. Stereoscopic X-ray pictures may be useful in helping to find a small abscess in a large

mass of sclerotic bone.—*The Diagnosis of Subacute Osteomyelitis, C. E. Shattock, Practitioner, 1924, cxii, 296.*—(*E. C.*)

Treatment of Tuberculosis of Joints by Ignipuncture.—For 15 years *ignipuncture* has been used by the author for treating tuberculous joints; a consequence of percutaneous application was the frequency of fistulae at the site of ignipuncture. For 10 years the method has been used in modified form, so that the skin is trimmed in flap form and the wound is sewed up after this minor operation.—*Eine geschlossene Methode der Ignipunktur bei der Therapie der tuberkulösen Gelenke, A. Abrashanow, Centralbl. f. Chir., June, 1923, l, 969.*—(*H. J. C.*)

Diagnosis and Treatment of Tuberculous Spondylitis.—The war set back the progress in public health tremendously and with it the situation in regard to tuberculosis is definitely poorer than it was in 1900. There is an increase in spinal tuberculosis of adults since the war, but this remains predominantly a disease of young children. The diagnosis in infants is difficult. In children the prominent symptoms are restlessness, crying out at night, sitting with the elbows supporting a part of the body weight by resting on a table, chair-arm, etc. There is local redness and pain and fixation of the vertebrae at or near the diseased area, and usually considerable fever. Later deformity occurs. Differential diagnosis sometimes calls for a consideration of gall stones, pyelitis, rickets, metastatic prostate carcinoma, fracture. Tuberculin for diagnosis should be used with very great caution. Spontaneous decrease in size of the diseased area (swelling) is no index as to healing, for the abscess may be draining interiorly to present at a lower point later, the process in the cervical, thoracic or lumbar spine each having its characteristic drainage point. A serious complication is paralysis of the lower extremities, bladder or rectum, or meningitis. The prodromal symptoms in most of these are easily overlooked. Therapy in recent years has been conservative, with general measures such as good hygiene and nourishment, immobilization, heliotherapy, biweekly skin applications of green soap, the use of special appliances (belts, extension apparatus, casts, etc.) to give local rest to the affected part. Laminectomy may also be done with good results. Pointing abscesses may be treated by drainage or removal of the abscess wall and the introduction of 10 per cent iodoform-glycerine mixture. Simple puncture followed by injection of the mixture is often adequate.—*Diagnose und Therapie der Wirbelsaülentuberkulose, A. Brüning, Deutsche med. Wchnschr., April 4, 1924, 1, 426.*—(*H. S. W.*)

Recurrent Pott's Disease.—The patient, a young woman of 25, came to the hospital for dorsolumbar pain. At the age of 16 she was treated for Pott's disease, first at Berck, later at Cannes, for four or five years, after which she appeared to be cured and resumed her activities, but noticed that she tired easily. The present symptoms began about a month previously, with pains radiating from the left side down the leg, shooting in character, accompanied by a burning sensation. The question arises whether this spinal lesion represents a recrudescence or a new implantation. The same question arises in the case of lymphatic tuberculosis in which cervical adenitis has occurred in childhood. Here we have two opposite opinions: one that bacillary manifestations in childhood, whether cured or not, constitute a sort of vaccination and confer a degree of immunity; the other, in which Delbet concurs, believing that such a childhood manifestation constitutes a future menace and does not augment resistance to tuberculosis. There have been described two classic forms of vertebral tuberculosis: the diffuse superficial form, invading the broad anterior ligament and sometimes extending from the cervical to the lumbar spine; and the localized cavernous form, more common, which involves only one or a few vertebrae and leads to a more or less complete destruction of their bodies. There is also a form with multiple foci. In this case pain, radiating in distribution, is the chief complaint. Both girdle pains and radiating pains are common in Pott's disease, the latter being due to compression of the spinal nerve roots. In general the symptoms depend much on the site of the lesion. Cervical Pott's disease is apt to begin with muscular contractures. In addition to the sensory symptoms, the nerve-root pains, many cases show motor symptoms, paretic phenomena, as in the pianist who faltered or skipped notes in his scales, and another patient who habitually upset his soup. The reflexes are often exaggerated, due to hyperemia, resulting from slight compression of the intervertebral venous plexus. Successive tendon percussion may set up a tetanic or clonic contraction. Deformity is variable. In the dorsal spine a slight deformity may give rise to a considerable salient, while in the lumbar spine it may be scarcely appreciable. Pressure over the spine is rarely painful. *Treatment:* Passing over heliotherapy, which is of accepted value, dietetic treatment, which is of very little, and sera and vaccines which are of none at all when actual bony necrosis exists, we have in rest of the vertebral column the most important factor. Confinement to bed in dorsal decubitus affords this. Plaster jackets do so less completely, because the strain is transmitted from the pelvis and the other nonencased parts. Hollurg's operation of splinting the spine by a bone graft from the tibia relieves the vertebral bodies of most of the strain and is more and more commonly employed.—*Ré-*

cedive d'un mal de Pott dorsolombaire, Delbet, Clinique chirurgicale, Prog. Méd., March 22, 1924, no. 12, p. 246.—(A. P.)

Treatment of Pott's Disease with Bier's Hyperemia.—In a case of Pott's disease of about four year's duration, the patient, who had at first been kept in a cast and given much care, subsequently developed a large soft swelling about 8 by 6 inches in the dorsal region. A special Bier's apparatus which more than covered the swelling was applied over it night and morning, care being taken not to exhaust too much air till the patient became accustomed to the treatment. The second week three treatments of twelve minutes each were given daily. The suction was gradually carried further but always stopped when the skin became blue. Four applications of eight minutes each were next given, and at the end of the eighth week the patient was able to sit up in bed without assistance; in six weeks she was able to walk, and Swedish gymnastics and breathing exercises were prescribed. In three months the patient could play tennis and she has remained well for fourteen years.—*Pott's Caries Successfully Treated by Passive Congestion, V. S. Delaney, Practitioner, June, 1923, cx, 455.—(E. C.)*

Treatment of Tuberculous Spondylitis.—In the surgical clinic of the University of Königsberg the Albee operation has been found reliable. A large, exactly fitting tibial splint is inserted to support the diseased vertebrae. In the Albee operation the autotransplant has proved preferable to the recently recommended *alloplasty.—Zur Technik der operativen Versteifung der Wirbelsäule bei der Spondylitis tuberculosa, E. König, Centralbl f. Chir., January, 1923, l, 119.—(H. J. C.)*

Treatment of Tuberculous Spondylitis.—In the Bonner Clinic during 1913 to 1921 the Henle and Albee operations were used. Of 33 cases 20 per cent died, 6 per cent are in bad condition, 12 per cent are improved, and 55 per cent can be considered healed clinically. Especially the early results are excellent. General treatment must be given the greatest attention. The mobility of the vertebrae is not appreciably influenced. The appearance of paralyses and abscesses can often not be prevented.—*Die operative Versteifung der Wirbelsäule bei der Spondylitis tuberculosa, R. Sträter, Deutsche Ztschr. f. Chir., 1923, clxxvii, 313.—(H. J. C.)*

Spinal Fusion in Treatment of Pott's Disease.—Vertebral tuberculosis is by far the most frequent and most serious manifestation of bone and joint tuberculosis. Two operative methods have been devised for the treatment of this disease: (1) the spine fusion of Hibbs and (2) the tibial bone graft of Albee. In view of the advantages of spine fusion over other operative procedures and in view of the statistical evidence showing the large percentage of good results obtained by it, vertebral tuberculosis is best treated by this operation. It offers the patient his greatest hope for a cure in the shortest possible time, with the least inconvenience to himself and to his family. The operation is extremely safe, comparatively simple, and based upon sound surgical and pathological principles. The various objections to this method of treatment are very largely not borne out by facts. It is most unfortunate that they are raised at all, since hundreds of people suffering from Pott's disease are annually deprived of their greatest hope for an early cure with a minimum amount of deformity and with escape from distressing fatal sequelae.—*Spine Fusion in the Treatment of Vertebral Tuberculosis, R. F. Sullivan, Boston M. & S. J., July 17, 1924, cxci, 114.—(B. T. McM.)*

Albee Operation.—It is pointed out that most operators do not adhere strictly to the Albee method, which is believed advisable. The method is briefly detailed again.—*Zur Technik der Albee-Operation, E. Birt, Centralbl. f. Chir., August, 1923, l, 1203.—(H. J. C.)*

Tuberculous Tenosynovitis of Hand.—Thirteen patients with tuberculosis of the tendon sheaths of the hand were treated by active surgical intervention; in 9 with tuberculosis of the flexor tendon sheaths the tendons had been involved at a few points. When, for this reason, it was necessary to excise tendons the severed ends were attached to the corresponding adjacent tendon. Usually the tuberculous sheath may be removed, leaving an apparently normal tendon; the median nerve is often completely surrounded by tuberculous tissue, but though it may be inflamed and swollen it is usually intact. Splints were not applied nor use of the hands prohibited. None of the 9 cases had a recurrence and all recovered approximately complete function except those in which the tendons had been excised; these suffered very little disability. Four patients had tuberculosis of the dorsal tendon sheaths; two recovered completely; in one a suspected pulmonary involvement became active shortly afterward, other dorsal sheaths became tuberculous and a recurrence at the site of operation probably occurred. In the other patient complete dissection was not possible, and there was a recurrence with sinus formation. A cure was subsequently effected by immobilization and sun-baths. That local infection was responsible for the tuberculosis seems indicated by the fact that in every case but one the right hand was infected; in the single exception the patient was left-handed. Only

one patient had pulmonary tuberculosis and none had demonstrable lesions elsewhere. Complete surgical removal, when it is possible, seems preferable to procedures involving prolonged immobilization, with its resultant contractures, adhesions and loss of nerve function, though these are usually temporary.—*Tuberculous Tenosynovitis of the Hand, A. K. Kanavel, Surg. Gyn. & Obst., November, 1923, xxxvii, 635.*—(*E. C.*)

Cause and Prevention of Tuberculous Meningitis.—In 70 autopsies an old tuberculous focus was found in all but one case. In 87 per cent the lesion was in the bronchial lymph nodes; the lesion considered primary was in the mesenteric nodes in 11 per cent; there were caseous mesenteric nodes in 58 per cent, but when both lesions were present those in the mediastinum were regarded as primary. In 90 per cent of the cases the lungs were involved; in over 75 per cent the spleen, liver and kidneys were affected; in 45 per cent there was tuberculous ulceration of the bowel. The change to a general miliary tuberculosis seems to be favored by a number of factors unfavorable to the child; the disease is especially prevalent among the poor; it is most frequent in the spring when good food and good milk are scarcest and dearest, and when the child's health is impaired by the winter's confinement; it often follows measles or whooping cough. It is most frequent in the second year of life, the age at which poor children are likely to be most closely confined during the winter months. Miliary tuberculosis may be regarded as to a great extent preventable, but prevention must be limited to protection of the child from infection or early discovery and cure of primary lesions.—*Tuberculous Meningitis—Is It a Preventable Disease, D. Paterson, Practitioner, June, 1923, cx, 431.*—(*E. C.*)

Tuberculous Meningitis Simulating Epidemic Encephalitis.—Notwithstanding the fact that the differential diagnosis between meningitis and epidemic (lethargic) encephalitis, as given in most textbooks, appears to give little difficulty in actual practice, a correct diagnosis is often impossible. This is especially true in cases occurring in adults who have been in good health previous to the outbreak of disease. In tuberculous meningitis the correct diagnosis depends on a painstaking examination of the cerebrospinal fluid. The fluid is usually under pressure, clear or turbid, often forms a clot on standing, and shows a reduction in normal sugar. A pleocytosis with a high proportion of lymphocytes is a common finding. The demonstration of tubercle bacilli by smears or by animal inoculation is, however, conclusive. The illness is usually fatal within three weeks. Epidemic encephalitis may occur at any age It is more prevalent in the winter months. The onset may be insidious or abrupt, and usually appears as a general infection, followed by nervous manifestations. Paralysis of any cranial nerve may be encountered, but involvement of the third, fourth and sixth is most frequent. Lethargy, while occasionally absent, is present in the majority of cases, in which instances the patient can be easily aroused. Irritability often occurs. Delirium is a common symptom. Meningeal symptoms may be present. The reflexes are variable. The cerebrospinal fluid is usually clear. The pressure is normal or slightly increased. The cell content is normal in about one-third of the cases, while in the remainder there is a pleocytosis averaging 20 to 30 cells per cmm., the lymphocytes predominating. The reducing bodies do not disappear, and the globulin may be normal or slightly increased. The course of the disease is slightly irregular and prolonged. With severe symptoms the termination may be rapidly fatal, while if the disease extends beyond a period of three weeks, recovery is probable. There is often a recurrence of symptoms. Permanent changes in various parts of the nervous system, with resulting symptoms, may occur as sequelae. It will, therefore, be seen that the diagnosis depends largely on careful and repeated examinations of the cerebrospinal fluid.—*Tuberculous Meningitis Simulating Epidemic Encephalitis, M. Bernstein, Jour. A. M. A., June 14, 1924, lxxxii, 1915.*—(*B. T. McM.*)

Tuberculous Encephalitis in Children of Manchuria.—In the Dairen Hospital there were studied 66 typical cases of tuberculous encephalitis among children. A clinical review of these cases is presented.—*Clinical Observation on Infantile Tuberculous Encephalitis Occurring in Manchuria, J. Kaneko, Toyo Igaku Zasshi, November, 1923, i, no. 4, Abstract from Japan Med. World, April, 1924, iv, 102.*—(*M. M.*)

Glycyl-Tryptophane Test in Tuberculous Meningitis.—A positive glycyl-tryptophane test on the spinal fluid was found to be a certain indication of the presence of tuberculous meningitis, as originally reported by Mandelbaum. A negative reaction, however, does not exclude tuberculous meningitis, as 5 out of 20 spinal fluids containing tubercle bacilli failed to give the test.—*Die Glyzyltryptophanprobe bei Meningitis tuberculosa, S. Hillenberg, München. med. Wchnschr., December 28, 1923, 1528.*—(*E. R. L.*)

Production of Tuberculous Meningitis in Rabbit.—Rabbits were inoculated subdurally with human, bovine, and avian tubercle bacilli. Tubercles were formed in the meninges, the clinical manifestations being paralysis and death. The cerebrospinal fluid was turbid. Albumin and globulin were increased. The sugar content

was decreased. The percentage of lymphocytes gradually increased.—*The Production of Tuberculous Meningitis in the Rabbit, and the Changes in Its Cerebrospinal Fluid, M. Kasahara, Am. J. Dis. Child., May, 1924, xxvii, 428.*—(*P. J. W.*)

Statistics on Tuberculous Myelitis.—*A Statistical Observation on Tuberculous Myelitis, T. Hori, Juzen-Kwai Zasshi, September, 1923, xxviii, no. 9, Title from Japan Med. World, January 1924, iv, 4.*—(*M. M.*)

Tuberculoma of Pituitary Body.—A case of tuberculosis affecting the pituitary body and adjacent structures in a youth, aged 16, is described. The first symptoms of the condition were pain over the left brow and loss of sight in the left eye which had come on gradually during the previous month. Examination showed the right eye to be unaffected but there was no perception of light in the left. Following hospital admission the temperature gradually rose to 103° and polyuria became marked. Examination of the cerebrospinal fluid showed an increased cell count, mostly small lymphocytes, but tubercle bacilli could not be demonstrated. Later, symptoms of cerebral irritation became marked and patient died one month after admission. A postmortem examination showed a mass surrounding the pituitary body, the optic chiasm and adjoining portions of both nerves and tracts, which extended into the left orbit through the optic foramen. The mass on section proved to be tuberculous. The brain was not involved nor were tubercles found elsewhere.—*Tuberculoma of the Pituitary Body, T. W. Letchworth, Brit. M. J., June 28, 1924, no. 3313, 1127.*—(*J. S. W.*)

Anatomic Studies on Tuberculosis of Nerve Centres.—The diagnosis of tubercle of the cerebrum is fraught with difficulties. Here are found the most atypical lesions histologically, reactions to the bacillus being quite different from those in the thorax and abdomen. In the nerve centres particularly is found tuberculosis without tubercle formation. To add to the difficulty, the tubercle bacillus is very hard to demonstrate, especially after fixation in formol, the generally accepted method. There is, first, a discussion of the various methods employed to demonstrate the bacillus in such lesions, ending with a recital of the advantages of a somewhat modified Ehrlich technique with aniline-fuchsin. This technique stains bacilli in old material preserved for years in formol and merits study by any one interested in this subject. The material examined is from 31 cases of tuberculosis of the nerve centres, from the Charcot Clinic at the Salpetriere in Paris. It includes the following forms: (1) tuberculous meningoencephalitis, (2) tubercles of the cerebrum, (3) tubercles of the cerebellum, (4) tubercles of the Pons, and (5) Pachymeningitis and tuberculous myelitis. Of 4 cases of tuberculous meningitis all were without tubercle formation, and in another 10 cases of meningitis which terminated cases of central tubercle there was no tubercle formation in the meninges. In fact, one conclusion is that the frequency of forms of tuberculosis of the nervous system without tubercle formation makes a very vigorous search for tubercle bacilli quite essential for anatomic identification. In general, the article is too long and complex to lend itself well to abstracting. The author's observations like their technique should be studied in the original.—*Études anatomiques sur la tuberculose des centres nerveux, I. Bertrand and G. Médakovitch, Ann. d. Méd., xv, May, 1924, 419.*—(*W. B. S.*)

Etiology of Lupus Erythematosus.—A study of 200 cases led to the conclusion that lupus erythematosus has no connection with tuberculosis except when that disease may create a predisposition to cutaneous disturbance that may be produced by a variety of toxic or septic causes. The actual cause is considered to be the local presence in the skin of some toxin coming from a diseased organ or a septic focus. The predisposing causes are seen in sensitiveness of the skin, either a congenital or an acquired weakness of the peripheral circulation. The situation of the lesions is anatomically determined, a common site being in portion of skin stretched over bone or cartilage. In none of the cases examined were tubercle bacilli found in the lesions; inoculation into susceptible animals were invariably negative; tuberculin tests failed to give Pirquet or Calmette reactions. Of 100 cases exhibited to the Dermatological Society of London there was a family history of tuberculosis in only two; of 120 consecutive cases at Charing Cross Hospital there was evidence of tuberculosis in only six and a family history without personal evidence of tuberculosis in only three. The histological picture is unlike the picture produced by the reaction of the skin to the tubercle bacillus *in situ*. In the discussion that followed the reading of Dr. MacLeod's paper, Dr. John A. Fordyce, Dr. Walter H. Highman and Dr. Sigmund Pollitzer of New York, and Dr. John H. Stokes of Rochester, Minnesota, were opposed to the opinion that the tubercle bacillus could be excluded as a cause of lupus erythematosus. Concerning evidence that tuberculosis has been eliminated as a factor in a given case Dr. Stokes referred to three cases in which careful surgical exploration had failed to disclose glandular mesenteric tuberculosis that was later discovered by postmortem examination. Other necropsy studies, he said, had emphasized the mistake of accepting too

unqualifiedly a denial of the presence of tuberculosis made by a medical examiner. Dr. Pollitzer pointed out that many successful inoculations into rabbits and guinea pigs are recorded in the literature and that a causal relationship between lupus erythematosus and tuberculosis is not to be doubted; he considers that the toxins of tubercle bacilli of low virulence are the cause of many cases, though the cutaneous reaction involved may also be produced by other causes.—*Lupus Erythematosus, J. M. H. Macleod, Arch. Dermatol. & Syphilol., January, 1924, ix, 1.* —(*E. C.*)

Tuberculin Treatment of Lupus Erythematosus and Erythema Induratum.—Newer work has thrown but little light on the nature of lupus erythematosis. The relation of this disease to tuberculosis is often suggestive and in many cases seems to be intimate. The disease is variable and responds irregularly and unsatisfactorily to various types of treatment. Its possible relation to tuberculosis suggests the use of tuberculin in therapeutic doses. One patient, aged 43, had been ill for twenty years with lesions on the face, neck and elbow. No signs of visceral tuberculosis could be made out. Tuberculin was administered once a month for six months. The patient became free from lesions and symptoms and has remained so for a year and a half. The tuberculin injections elicited marked local and constitutional reactions with fever. Two cases of erythema induratum were also treated with tuberculin; one with complete restoration to health, the other with improvement.—*Tuberkulinbehandlung des Lupus erythematodes und des Erythema induratum Bazin, H. Sieben, Deutsche med. Wchnschr., March 7, 1924, 1, 304.*—(*H. S. W.*)

Erythema Nodosum with Tuberculous Bacillemia.—Calmette showed that erythema nodosum is caused by a bacillemia. Landouzy and Loederich, by grinding up and inoculating a nodule of erythema nodosum excised from a living patient, succeeded in transmitting tuberculosis to a guinea pig. Hildebrandt later confirmed this. Ernberg reported an investigation into the fate of children who had suffered from erythema nodosum; of 35 between the years 1908 and 1914, he personally examined 31 during the winter of 1916–1917. Not one had developed rheumatic fever or any signs of rheumatism, whereas in 13 cases symptoms of tuberculosis had supervened, and one patient had died of miliary tuberculosis. In most the tuberculous symptoms had appeared during the first months or year after the outbreak of erythema nodosum. In a further clinical study of 55 cases Ernberg made an X-ray examination of the chest in 39, and found extensive tuberculous lesions due to active disease in 35. The remaining 4 showed no radiographic changes in the lungs, but 2 had tuberculous lymph nodes in the neck, and 2 subsequently developed phlyctenular conjunctivitis. The 2 cases forming the subject of this paper both came from the same village and occurred within a few months of each other. The first, a boy, aged 9, previously healthy, developed erythema nodosum in February, 1923. In May, 1923, roentgen ray and physical findings pointed to pulmonary tuberculosis. In July, 1923, he died of meningitis, presumably tuberculous. The second case, a boy, aged 13, had erythema nodosum. When the erythema cleared up he continued to have fever and grow pale. He subsequently was admitted to the Derbyshire County Sanatorium, Arneth's count showed a deviation to the left, and Spengler's precipitation test was positive.—*Two Cases of Erythema Nodosum with Tuberculous Bacillaemia, J. A. Watt and E. S. Stubbs, Brit. M. J., March 8, 1924, no. 3267, 422.*—(*B. T. McM.*)

Ultraviolet-Ray Treatment of Skin Tuberculosis.—Two patients with ulcerated erythema induratum were treated by rays from an air-cooled lamp. They were also kept in bed and given codliver oil. The ulcers healed in a shorter time than ulcers not given ultraviolet treatment. Another patient, blond, whose skin does not pigment, has been treated for six months without improvement. Two patients with tuberculosis verrucosa cutis on the back of the hand were treated by pressing the quartz lens of a water-cooled lamp firmly against the lesions; five or six applications affected a cure. Cases of lupus erythematosus were not improved by ultraviolet rays, but were cured or improved by carbon-dioxide snow or radium applications.—*Ultraviolet Ray Therapy in Dermatology, John Butler, Arch. Dermatol. & Syphilol., January, 1924, ix, 51.* —(*E. C.*)

Impetigo-Like Tuberculosis of Skin.—A case of skin tuberculosis presenting impetigo-like features is reported. The symptoms were mild but the case afforded a dangerous source of infection.—*On a Case of Impetigo-Like Skin Tuberculosis, H. Tamura, Jika Zasshi, April, 1923, no. 275, Abstract from Japan Med. World, February, 1924, iv, 44.*—(*M. M.*)

Relation of Skin Tuberculosis to Blood Vessels.—*The Relation of Skin Tuberculosis to the Blood Vessels, E. Yanagisawa, Toyo Igaku Zasshi, November, 1923, i, no. 4, Title from Japan Med. World, April, 1924, iv, 102.*—(*M. M.*)

Chronic Miliary Tuberculosis.—The types of pulmonary tuberculosis of which our knowledge will be most modified by careful X-ray study are miliary disease and fibrous

tuberculosis, because they are two forms which lend themselves least well to physical and best to radiological examination. Cases in which X-ray examination shows as dominating elements small more or less extensive nodules in both lungs—the classic appearance of miliary tuberculosis—are seen in three distinct forms: (1) the acute form, (2) the type with episodal miliary extension and (3) the chronic miliary type of tuberculosis. While the acute forms usually end fatally, there are subacute cases in which the tendency is to heal. The authors have collected 20 in all. The authors define their cases as chronic miliary tuberculosis, characterized anatomically by lesions of miliary type, a disease slow and discontinuous in evolution, at times long drawn out, with mild toxemia and local symptoms, little affected by treatment. Auscultatory signs are almost exclusively those of progressive apical sclerosis. Total regression of the lesions is a possibility. If they go on to death, the latter may be from toxemia, heart weakness, ulcerative tuberculosis, acute miliary disease or bacillemia. In the authors' cases which came to autopsy, the patients died after two, three or four years of illness. The lungs were sown with innumerable small tubercles, striking in their symmetrical distribution in both lungs. In addition there was a superadded and varied pathological picture, according to the course taken by the disease. The bronchi always showed fibrous peribronchitis, and the interstitial tissue and the pleura were usually hyperplastic. Histologically, the lesion was one of nodular peribronchial lymphangitis, the tubercles being small sclerotic nodules. Clinically the symptoms were slight. The temperature was normal or subnormal. The condition may attain its maximum with a minimum of fever. Tachycardia was frequent but not constant. Cough and expectoration were very moderate and sputum if present usually showed no bacilli. Dyspnea was always present, but in only slight degree. Hemoptyses occurred in 15 of 20 cases, but they were small in amount and unaccompanied by fever. The limited physical signs were in marked contrast to the extensive lesions found in the X-ray films. Fluoroscopy, on the other hand, may reveal only a haziness and not indicate the real diagnosis. The longer the duration of the disease the more complex become the associated lesions, and it is only in the early stage that the typical miliary nodular effect is found.—*Granulies froides et granulies chroniques, R. Burnand and L'Sayé, Ann. d. Méd., May, 1924, xv, 365.*—(*W. B. S.*)

Diagnosis of Renal Tuberculosis.—Renal tuberculosis is recognized without much difficulty when the usual clinical data are present. Unfortunately, however, the diagnosis of the disease is frequently obscured, either by the absence of any clinical data indicative of involvement of the urinary tract, or by the presence of data that are suggestive of conditions other than tuberculosis. The degree of severity of subjective symptoms resulting from renal tuberculosis is largely dependent on the patient's resistance. The extent of the renal lesion found at operation in cases in which there had previously been little or no evidence of the disease is often astounding. Clinical bilateral renal tuberculosis, although usually distinguished from bilateral pyelonephritis without great difficulty, may be difficult to recognize in certain instances because of the clinical data. The clinical course is often surprisingly long; patients are observed whose symptoms have existed from ten to twenty years. In spite of the progressive improvement in cystoscopic technique it usually fails in the identification or localization of the disease. A common source of error is caused by an inflammatory proliferation of the mucosa, or granuloma, which may be so extensive as to simulate epithelioma very closely. The ease with which a contracted tuberculous bladder may be perforated in the course of cystoscopic examination is not generally appreciated. Stricture of the lower ureter in cases of renal tuberculosis may cause symptoms that disguise the nature of the lesion. In general, every stricture of the ureter with unilateral renal infection should be regarded as indicative of renal tuberculosis until it is definitely excluded by repeated microscopic examinations and guinea-pig inoculations. The roentgenographic shadows thrown by renal tuberculosis may so closely resemble those caused by lithiasis that it is difficult to differentiate the two conditions. The discovery of one or two pus cells in the specimen obtained from the kidney by means of urethral catheters is of questionable importance in the diagnosis of tuberculosis. In cases in which bilateral disease is in doubt, renal functional tests have proved to be of little practical value. In drawing conclusions in regard to the existence of tuberculosis in the other kidney there may be considerable error in guinea-pig inoculations. In the experience of Beer, Hyman and Mann it is as high as 36 per cent. They believe that possibly a positive guinea-pig inoculation may be caused by the bacillus of tuberculosis which may have been picked up by the urethral catheter in transit through the bladder, or diseased lower ureter, and obtained from the upper ureter or renal pelvis as the result of urethral reflux; or through "excretory tubercle bacilluria." Furthermore, the bacilli in the bladder may have their origin in tuberculosis of the genitalia. This contention is supported by the fact that in 5 of their patients for whom the guinea-pig inoculations of the supposedly healthy kidney were positive, 4 are now alive and well. No

pathologist has ever demonstrated a healed tuberculous lesion of the kidney. However, it would seem possible that in the case of a sudden acute infection of the kidney, confined to a number of minute areas, spontaneous recovery might occur. *Conclusions:* 1. The diagnosis of chronic tuberculosis, unilateral or bilateral, may be exceedingly difficult. 2. With the patient's increased resistance, the usual urinary symptoms may be absent, and the urine normal save for an occasional pus cell. 3. Repeated examinations of the urine for the bacillus of tuberculosis and guinea-pig inoculations at various intervals may be the only method of establishing the diagnosis. 4. When repeated guinea-pig inoculations with the urine from one kidney are positive, even though no other clinical data are present, the inoculation results can usually be regarded as sufficient to warrant operation. 5. The renal lesion in such cases is characterized by encapsulation of the infected renal areas. 6. The number of pus cells found in the microscopic examination of the catheterized urine is not at all indicative of the extent of the lesion. The finding of one or two pus cells in the catheterized urine from the supposedly healthy kidney is not of much practical significance. 8. Confusion of vesical granuloma accompanying renal tuberculosis with vesical neoplasm is not uncommon and differentiation is best made by microscopic examination. 9. With ureteral stricture, and particularly with secondary infection, the clinical data usually observed with renal tuberculosis may be obscured. 10. Bilateral tuberculosis occurs more commonly than the usual clinical data indicate. 11. In cases of bilateral renal tuberculosis, in which only one kidney is markedly diseased, removal of this kidney is justified. 12. Tuberculosis in the supposedly healthy kidney is probably a common cause of death within a year or two after nephrectomy. 13. Spontaneous recovery from acute renal tuberculosis must be regarded as possible in exceptional instances.—*Possible Errors in the Diagnosis of Renal Tuberculosis, W. F. Braasch and A. J. Scholl, J. Am. M. Ass., March 1, 1924, lxxxii, 688.*—(*B. T. McM.*)

Care of Stump of Ureter at Operation for Renal Tuberculosis.—In 8 cases of extirpation of purulent tuberculous kidneys the author's method of treating the ureter stump, which should be read in detail in the original, resulted in primary healing of the stump. Essentially the method consists of the proper use of gauze and tincture of iodine. —*Zur Versorgung des tuberkulösen Ureterstumpfes, G. Praetorius, Centralbl. f. Chir., May, 1923, l, 707.*—(*H. J. C.*)

Male Genital Tuberculosis.—The large amount of material of Hamburg-St. Georg since 1895 was studied. Only such cases were included as were histologically diagnosed tuberculosis after operation. There were 122 operations on 90 cases. The spread of male genital tuberculosis is discussed. The Bruns-Baumgarten theory is not concurred in. The view taken from the material studied is that in double-sided disease both testipetal and testifugal spread is possible. The testicle was involved with the epididymis in 50 per cent. Among the operative material there was lacking a clinically definite prostatic disease. Frequently there was coincident disease of the kidneys and bladder on the one hand and of the genitalia on the other. The question as to the primary organ affected is left open. Diagnosis may be difficult and wait upon histological examination. The results of one or double castration are about the same; 30 per cent of one-sided castrations developed involvement of the other side. In all these cases fistulas, which appear sooner or later after operation, indicate tuberculosis, which in spite of the operation was not completely removed. Radical operation is preferred. Roentgen treatment of male genital tuberculosis is considered valueless.—*Zur männlichen Genitaltuberkulose, R. Reinicke, Deutsche Ztschr. f. Chir., June, 1923, clxxx, 130.*—(*H. J. C.*)

Tuberculosis of Penis.—*Five cases of Tuberculosis of the Penis, S. Kitajawa, Nihon Hitsunyokibyogakkai Zasshi, December, 1923, xii, nos. 1 & 2, Title from Japan Med. World, May, 1924, iv, 126.*—(*M. M.*)

Volvulus of Fallopian Tube in Tuberculous Pyosalpinx.—Volvulus of the fallopian tube is a rather infrequent and interesting condition. The diagnosis of tubal torsion has never been made before operation. This paper reports, in an unmarried woman aged 22, a volvulus of the fallopian tube in a case of tuberculous pyosalpinx. At operation on microscopic examination gonorrhea could not be excluded. Subsequently the pathological findings established the diagnosis.—*Volulus of the Fallopian Tube in a Case of Tuberculous Pyosalpinx Simulating Gonorrheal Pyosalpinx, J. J. Wells, J. Am. M. Ass., July 5, 1924, lxxxiii, 30.*—(*B. T. McM.*)

Treatment of Pulmonary Tuberculosis.—The list of treatments is ever lengthening; but this alone affords little encouragement, for we can, as a rule, judge the efficacy of treatment as inversely proportional to the number of remedies suggested. Early diagnosis and treatment is of crucial importance, yet the student gets less and less opportunity of studying the symptoms and signs of this disease, as it comes more and more under the control of the health authorities and appears less and less in the outpatient department and wards of teaching hospitals. In the future it may be necessary to affiliate more of the tuberculosis dispen-

saries to the teaching hospitals. A short stay as resident clinical assistant in a sanatorium might be a very valuable form of postgraduate study. Secondly, it is necessary to recognize the type and stage of the disease and to adapt treatment accordingly. The third principle is to increase the resisting power of the individual by every possible means. The fourth principle is to secure as complete rest as possible to the diseased lung, or part of the lung, with a view to localizing the effects of the disease and preventing systemic toxic reaction. The object is to convert the lesion from an open to a closed condition, from a spreading toxic process to a localized nontoxic healing one. Accurate diagnosis depends on a full and careful history, complete physical examination, clinical records, sputum examination, and X-ray studies of the lungs. To assess activity in patients with doubtful signs, or those in whom the clinical features suggest arrest or obsolescence, tuberculin reactions, especially the subcutaneous and the quantitative Pirquet, may be useful, but the former is not devoid of risk and is inapplicable in febrile cases, while the latter is not a strict measure of activity. The complement-fixation test is not reliable for this purpose; opsonic determinations may be of value but have been given up because of technical difficulties. In doubtful cases we often have to act on the balance of probability. In selecting treatment for a given case one must consider family, financial and personal features. Treatment may be at home, in a nursing home or hospital, a sanatorium, at a mountain resort, or some marine or other climatic station, and at various stages a case may be suitable for several of these in sequence. In the febrile stage home treatment may be most suitable, providing proper medical attention and facilities are available. Later, when toxic manifestations have subsided, removal of the patient to a sanatorium or other place may be considered. Home treatment may also be best for chronic, slowly progressive cases in which other measures have failed, for cases complicated by visceral metastases or by other conditions, and for advanced cases if the risks are realized and precautions taken. Preliminary treatment may be carried out in a nursing home or hospital when this is not practicable at home. Sanatorium treatment is of the greatest value, and there is a stage in the majority of cases, other than the acute, when it may be the best form to adopt; best results are obtained in first-stage cases and in those without tubercle bacilli in the sputum. The success of sanatorium treatment depends more upon the personality of the superintendent and upon the manner in which the institution is run than upon its situation. The types suitable for this treatment are: (1) early cases without fever; (2) early cases in which fever has subsided and the patient is able to be up at least four hours a day, and preferably six to eight hours; (3) old arrested cases with slight breakdown; (4) most cases in which artificial pneumothorax has been successfully established; (5) cases after pleural effusion. Unsuitable cases are: (1) cases with active spreading disease showing fever and toxemia; (2) cases with severe complications likely to require much nursing and prolonged stay in bed; (3) cases with chronic bronchitis, chronic arthritis, or with severe cardiac embarrassment; (4) tuberculosis in the elderly or aged; and (5) certain persons of shy personality and home-loving character to whom removal to any institution is a matter of dread or dislike. Character is a great factor and the lack of it hinders recovery. In general, a patient should stay at least four months in the sanatorium, and, if possible, six or eight. Change to another sanatorium is often desirable when progress is slow. The proper climate for this disease is that in which there is an abundance of fresh air and sunshine and where there is comparative freedom from dust and strong prevailing rainbearing winds. Treatment at mountain stations is chiefly suitable for patients out of health in whom the diagnosis is doubtful, as they can receive treatment without the stigma too often attaching to patients who have been in a sanatorium, for patients with early afebrile disease or with localized disease and little fever, and for some chronic, slowly progressive cases. Cases not suitable for the mountains include those advanced with active, spreading disease and toxemia, cases with severe recurrent hemoptysis, or with complications, cases with extensive fibroid disease and those with emphysema, cardiovascular disease, or albuminuria. The features of marine and inland resorts, and desert stations are mentioned; the latter are often too dusty. As a part of the general management, patients should be instructed regarding the reasons for various rules and restrictions. Directions concerning facilities, daily routine, clothing, etc., must be given. Smoking but not inhaling may be permitted in moderation to cases in which arrest is satisfactory. Patients are to be instructed as to the disposal of sputum. Hyperalimentation has given place to a more rational dietary; a caloric value of 3000 to 3500 is usually ample to restore the patient to his "highest known weight." Various special diets, like the grape cure of Meran, sour milk, and the exclusive use of milk, come under the category of freak or fad treatments. Complete rest is essential as long as there is fever and toxemia; in febrile cases "absolute" or typhoid rest is usually necessary. It is only when the temperature becomes steadily normal or subnormal that we can consider allowing the patient up, and gradually increase the time up and then permit exercise. With any treatment it is important to adopt a critical altitude of mind and to moderate

our enthusiasm until it can be demonstrated that it gives results superior to the "normal coefficient of improvement." Among special forms of therapy, tuberculin has proved useful in localized or surgical forms of tuberculosis, while in the pulmonary forms it has been most disappointing. The types, clinical effects, and methods of giving tuberculin are discussed; likewise, partial antigens and defatted vaccines. As at present used, these agents have power for harm, and the chief use of tuberculin is in cases which have proceeded to arrest, but in which there is still left a small amount of sputum containing tubercle bacilli. Its employment is irrational in febrile cases. Serums, designed to confer passive immunity, have been less encouraging than tuberculin. The methods of Maragliano, Marmorek, Spahlinger, Uhlenhuth, and Spengler are mentioned. Secondary infection usually does not play a large part in this disease, but with chronic extensive lesions causing pyrexial attacks at intervals of a few weeks, not apparently due to tuberculous auto-inoculation and in cases with marked catarrhal or bronchitis signs, vaccines have proved useful. If applied with adequate care and judgment, graduated labor, as recommended by Paterson, is of great value in suitable cases. Among other forms of exercise, croquet and clock-golf are permissible, and horseback riding when the disease is quiescent; golf, cycling, rowing, and swimming should not be allowed before arrest is complete. Under chemotherapy, creosote, ichthyol, iodine, dyes, codliver oil and sodium morrhuate, gomenol, pneumosan, garlic, hypophosphites and glycerophosphates, cinnamates, metallic and mineral substances, mercury salts, calcium salts, silica, colloidal metals, and tissue extracts are discussed. As an inhalent, the following formula, in use at the Brompton Hospital, has been helpful in lessening cough and expectoration, and especially in laryngeal cases: menthol 4 parts, oil of cinnamon 3 parts, oil of lemon 4 parts, creosote 20 parts, oil of pine 10 parts, spirits of chloroform 10 parts. Five to eight drops of this per hour are used with a respirator. Under physical methods of treatment are mentioned natural heliotherapy, artificial sunlight, and X-ray. Heliotherapy has been reported useful, especially in children, but in some cases it may cause fever, hemoptysis, or other manifestations of auto-inoculation; febrile cases should not be treated. Symptomatic and palliative treatments are often indicated; under this subject, cough, dyspnea, fever, nightsweating, hemoptysis, pain, digestive disturbances, and insomnia are considered. The period after sanatorium treatment and before full working capacity is attained is a very important one, and the patient must be advised specifically as to his activities. As a rule it is best for the patient to return to his former work under better conditions and with a better knowledge of how to live and work, unless that occupation is obviously unsuitable or dangerous. Of the methods for securing local rest for the lung, simple mechanical or physiological manoeuvres may be utilized, such as belts and strapping, sand bags, "lung splints," controlled diaphragmatic breathing, etc., but usually these are of limited value. Artificial pneumothorax is most suitable for patients in whom the disease is confined to one lung, or, in whom, if bilateral, there are only localized or slightly active lesions on the side less involved. It is indicated: (1) in cases running a progressive course in spite of routine rest treatment; (2) in cases with severe repeated or prolonged hemoptyses; (3) in cases becoming quiescent but with persisting cavities with positive sputum; (4) in cases becoming slightly febrile on attempting to increase the exercise or work; and (5) in cases with marked basic signs or with bronchiectasis. Contraindications include: (1) cases with active disease in the opposite lung, and severe tuberculous complications such as enteritis or bilateral renal tuberculosis; and (2) nontuberculous conditions such as poor physique, ill nutrition, and grave debility, feeble circulation, low blood pressure, severe visceroptosis, diabetes, chronic nephritis, asthma and advanced emphysema, in patients over sixty, neuroses, and mental instability. The use of the treatment under special conditions, the technique of its application, its complications and results, are discussed. The methods of dealing with pleural adhesions interfering with collapse of the lung are considered, that of Jacobaeus (thoracoscopy and cauterization) being given the preference. The surgical measures used in combination with pneumothorax, but usually after the latter has proved insufficient because of adhesions, are phrenicotomy, extrapleural pneumonolysis, and thoracoplasty; the technique, applicability, and effectiveness of these are outlined. The surgery of pulmonary tuberculosis promises to give good results, but it should be clearly recognized that surgery in this disease is not, and cannot be, a substitute for medical measures, but that it may be a valuable adjunct.—*Lettsonian Lectures on the Treatment of Pulmonary Tuberculosis, R. A. Young, Lancet, February 23, March 8 and 22, 1924, ccvi, 373, 481, and 581.*—(*J. B. A.*)

Treatment of Pulmonary Tuberculosis.—We have no specific treatment, either clinical or preventive. Yet the public demand treatment. With the rise and fall of methods and medicaments the death rate from tuberculosis steadily falls. Our best treatment is, of course, prophylaxis. The proper disposal of the secretions and excreta of all "open" and "potentially open" cases would result in disappearance of the disease. The application of such preventive

measures to all known cases is merely an approach to the goal, but highly important and often neglected. The proportion of persons infected in childhood appears to vary. In Vienna, in a group of 1100 children from ten to fourteen years, Von Pirquet obtained 70 per cent positive cutaneous reactions. In the 1922 Saskatchewan survey of 800 children of the same age, 57 per cent reacted, while in a recent rural and small town survey in Ontario, 41 per cent of a group of 540 children of the same age reacted. This shows that infection is appreciably less in a rural and small town population than in a crowded city. Whether adult tuberculosis is the result of a spread within the body of such childhood infection or due to a superadded infection we do not know. Pearson has found the coefficient of correlation of tuberculosis in husband and wife relatively low, no higher than that of insanity or eye-color. We do know that infants are very susceptible to exposure to open cases, and when infected usually develop active disease. We know that bovine tuberculosis is important in relation to cervical adenitis in particular. Park has found that in New York *with* pasteurization, 16 per cent of such adenitis cases are bovine, compared to 64 per cent *before* pasteurization. In Toronto there has been a marked decrease in tuberculous cervical adenitis and osteomyelitis since pasteurization. For sixty years or more prior to the war there had been a steady decline in tuberculosis mortality in England, Germany and the United States. This decline has not apparently been due to the result of medical research, but to improvement in living conditions and hygiene, improvement in the conditions of labor, and to the gradual development of an immunity, by one means or another. Our accepted treatment of pulmonary tuberculosis to-day is sanatorium treatment, the general principles being fresh air, rest while the disease is active, graduated exercise when quiescent, general hygienic supervision, and attention to complications. The results of patients treated outside sanatoria are variable, and depend largely on the attending or superintending physician as well as the patient. The secret of success is coöperation and strict application, especially of rest. Failure to carry out the regimen of rest a sufficient length of time is the chief cause of failure. The patient will not understand what is meant by rest unless it is carefully explained to him, and if he is not sent to a sanatorium complete instructions must be given for home treatment. Complete bed-rest, either on a protected porch or well ventilated room, must be continued until all fever has subsided for some time. As long as the patient continues to improve and his sputum to diminish it seems desirable to continue it. Lastly, pneumothorax has established itself as a most valuable palliative measure in advanced unilateral lesions. It is likely that we shall, in the near future, use it earlier in those cases tending to be steadily progressive. When there is an acute spread in one lung, its use should not be delayed. Thoracoplasty finds a place in some cases which do not permit of a satisfactory pneumothorax. Tuberculin is believed still to have a place in treatment. The type of case preëminently suitable for it is that with a chronic discharging sinus from the lung into a bronchus (persistently sputum positive with normal temperature), a condition comparable to any other tuberculous sinus. The doses should be small and gradually increased, watching for focal reactions. An occasional reaction does no harm.—*The Treatment of Pulmonary Tuberculosis, J. H. Elliott, Ann. Clin. Med., May, 1924, ii, 421.*—(*A. P.*)

Results of Treatment of Tuberculosis.—This study deals with the after-histories of 2,577 patients in the county of London who received institutional treatment during 1918. The cases were divided into two main groups: *Class A*, cases in which tubercle bacilli have never been demonstrable in the sputum and *Class B*, cases in which tubercle bacilli have been found. Class B is further sub-divided into three groups: *1:* Cases with slight constitutional disturbances. The obvious physical signs should be very limited. When one lobe only is involved, signs should not extend below the second rib anteriorly. When more than one lobe is involved the signs must be limited to the apices of the upper lobes and not extend below the clavicle and spine of the scapula. No complications (tuberculous or other) of prognostic gravity should be present. *Group 3:* Cases with profound systemic disturbance or constitutional deterioration with marked impairment of function either local or general, and with little prospect of permanent improvement. All cases with grave complications whether tuberculous or not, should be classified in this group, such as diabetes, tuberculous laryngitis or enteritis, etc. *Group 2:* All cases which do not fit into groups 1 or 3. In July, 1923, of the 762 *A* cases, 87.9 per cent were alive and 12.1 per cent dead. Of the 379 *B1* cases, 84.4 per cent were alive and 15.6 per cent were dead. Of the 770 *B2* cases, 39.9 per cent were alive and 60.1 per cent were dead. Of the 648 *B3* cases, 4.5 per cent were alive and 95.5 per cent dead. Among ex-service men the results were better than among civilians. This is due to the fact that there is no limit put to the institutional treatment of the former, and pensions and allowances eliminated financial worries. In group *A*, 45 per cent of the cases had only 7 weeks or less of institutional treatment. A further 44.5 per cent had from 7 to 14 weeks only. For the other group the period of sanatorium care

was about the same. With longer residential treatment the end-results would have been better. The ensemble of a patient's home environment, his housing, work, habits, temperament, and standard of living, determine the consumptive's future to a much greater degree than does his period of sanatorium treatment. Under the conditions to which the majority of London patients return on leaving a sanatorium, well-established pulmonary tuberculosis is rarely cured. This study shows that among the civil population the heaviest mortality occurred at the younger ages among women, namely from 16 to 30, and at a somewhat later age among men, namely from 36 to 50. Among ex-service men the greatest mortality was between the ages of 21 and 30.—*The Treatment of Pulmonary Tuberculosis, N. D. Bardswell, Tubercle, May, 1924, v, 370.*—(*B. T. McM.*)

New Medicaments and Nutrient Measures in Treatment of Tuberculosis for 1922.—A critical review not suitable for abstracting.—*Über neuere Medikamente und Nährmittel für die Behandlung der Tuberkulose, Bericht über das Jahr 1922, G. Schröder, Ztschr. f. Tuberk., July, 1923, xxxviii, 348.*—(*H. J. C.*)

Treatment of Nonpulmonary Tuberculosis.—Compared with his colleagues of the pulmonary field the worker in nonpulmonary tuberculosis is placed at a considerable disadvantage when he comes to consider the results of treatment, because he has three distinct factors to bear in mind, all of which at all stages enter into the picture. He is confronted with the presence of a general infection and by the local morbid process, and has thus to consider the arrest, quiescence or otherwise, of the tuberculous disease, both general and local; but in addition to these conditions he has also to consider the functional orthopedic result which may be the most important. Statistics support the following general statements about the results of the treatment of nonpulmonary tuberculosis: 1. That the proximate result of prolonged institutional treatment is to bring about quiescence of the disease in at least 75 per cent of all cases of nonpulmonary tuberculosis. 2. This result will be maintained in the after-history of not less than the same percentage of all cases. 3. The length of treatment required varies almost directly with the promptitude with which treatment is given after early diagnosis. 4. The expectation of life will not seriously be diminished in early cases suitably treated, and that diminution will be due essentially to any resulting crippling.—*Treatment of Nonpulmonary Tuberculosis, H. O. West, Tubercle, August, 1924, v, 523.*—(*B. T. McM.*)

Artificial Pneumothorax.—An account of personal experiences in pneumothorax therapy under more or less unfavorable conditions is given. The work had to be undertaken in the patients' own homes, often in out of the way hamlets, and sometimes in an unsatisfactory environment. The operation was attempted on 71 persons, of whom 40 were men and 31 women. An effective pneumothorax was produced in 50 of the 71 cases. In 21 failure was due to adhesions; 14 of these are dead, 8 dying in less than a year. Of the surviving 7, only 3 are in a satisfactory condition of health. If a free pleural space was not found on the first puncture, other attempts failed to show one. The first year is the one of critical importance. In 21 persons with an effective collapse 17 died in periods varying from two to eleven months. The causes of death were spread of disease to other lung, 9 cases; involvement of the larynx and intestines, 4; laryngeal trouble, 3; onset of intestinal tuberculosis, 2; septicemia from pyopneumothorax, 1; heart failure, 1; postinfluenzal pneumonia, 1. Intestinal tuberculosis is an absolute contraindication to artificial pneumothorax. Laryngeal complications are of grave prognostic import. The number of cases in which the disease spread in the other lung is no doubt a cause for discouragement, but some of these cases were undertaken when it was impossible to obtain X-ray photographs. Too implicit reliance on X-ray films will prevent much good work being done. Hard manual labor is contraindicated in the tuberculous. Of the 50 cases in which an effective pneumothorax was produced, 21 are dead and 29 survive. Eleven may be considered excellent results, 15 as good results, and 3 have made no improvement. Manometer readings may vary with the position of the patient and likewise the amount of gas that may be injected. Subcutaneous emphysema is of considerable value in prognosis. When the escaped gas forms, as it were, a large air-ring cushion the patient never recovers. In cases of pyopneumothorax surgical interference is often warranted. Pleurisy occurred in 21 of the 50 cases, or 41 per cent. In bronchiectasis considerable relief may be obtained by artificial pneumothorax, but these cases require very long periods of treatment, and frequently resort has to be made to thoracoplasty. Artificial pneumothorax has demonstrated the value of rest. In the tuberculous the thermometer alone should not determine the duration of rest. Pulse, weight, appetite, cough, and the state of the bowels ought to be taken into consideration.—*Personal Experiences in Artificial Pneumothorax Therapy, C. Rolleston, Tubercle, April, 1924, vii, 305.*—(*B. T. McM.*)

Artificial Pneumothorax To-day.—To-day artificial pneumothorax is seen as an established treatment, at least among those who count, despite the curious spirit of antagonism and avoidance which new ideas

appear to evoke in many minds. It is true that the idea of extending this treatment to early cases has not generally caught on, and most of us recognize that recoverable tuberculosis is best treated on sanatorium lines, without the addition of unnecessary risks. However, the sinister suggestion that a tuberculous lung once collapsed can never safely be reëxpanded is a mere obsession and bears no relationship to observed facts. While there are extensively diseased tuberculous lungs the full expansion of which is not to be wished for, for the most part, after a suitable interval, reëstablishment of function can safely be permitted. While pneumothorax is not to be advocated for early slight disease, the attitude is taken that it might be given earlier and most frequently in the case of hospital cases that cannot afford a protracted rest cure. The secret of success in pneumothorax lies in constant individual attention. *Selective Collapse:* In successful instances of this, the gas accumulates around the diseased part, the rest of the lung being allowed to function. Practically, there are many difficulties, and it is doubtful whether this method can be widely employed with any great degree of success and if the results generally justify the extraordinary amount of time which must be spent on each case. *Pleural Contraction:* This occurs more or less gradually in every case, and often to a greater extent than anticipated. Regular and careful clinical examinations before refills are recommended, also periodic reviews with the aid of radiograms, or at least the fluoroscope. Some consideration, however, should be given the patient's financial resources, as a careful study of the physical signs alone may be sufficient except in critical or doubtful times. *Pleurisy and Its Management:* Pleural contraction is especially active following a pleurisy. During the acute inflammatory stage, the pleural cavity should be left alone. Putting in more gas only aggravates the irritation of the pleural membranes. The one condition when pressure must be raised immediately is when adhesions are present and their shortening would threaten the maintenance of collapse. The cases are very few and far between, in which cutting or cauterizing adhesions need seriously be considered. After the subsidence of a pleurisy the pressure must gradually be raised, being guided by the position of the heart and mediastinum, and here high pressures do not harm, even + 35 to 40. *Points in Pneumothorax Practice:* Simplicity of the apparatus and mobility of the bottles are of prime importance. Also, when fluid must be aspirated and replaced with gas, the two procedures should be synchronous, in order to avoid alternate suction and compression of the lung, with resultant disturbing reactions from auto-inoculation. The use of a needle with a side opening is recommended, in order to avoid plugging. Warming the gas is unimportant, as so imponderable a substance can absorb little heat. Some consideration should be given the matter of posture as effecting intrapleural pressure. Refills should be guided by final pressure, not by quantity of gas injected. *Mode of Life:* Too long a continuance of the sanatorium regimen is not advised. The general health will often improve following a relaxation of discipline, when there is a satisfactory pneumothorax and the other lung is fairly reliable. Attention must, of course, be paid to adequate rest, open air, exercise and good food. When there is only a partial pneumothorax or a thoracoplasty, sanatorium after-care is more important. In connection with open air, the importance of unobstructed daylight is emphasized. Those who merely sleep with open windows often present a very poor appearance. The change after a day out of doors is often striking. *Present Status of Pneumothorax Treatment:* Only the "classical case" can be fully relied on to respond, and the more the indications are widened the more failures and disappointments. Also, no treatment is more closely individual and suffers more from hurry or neglect.—*Artificial Pneumothorax as I See It Today, C. Riviere, Tubercle, May, 1924, v, 361.*—(*A. P.*)

Bilateral Artificial Pneumothorax.—The Author has made different attempts at double artificial pneumothorax for severe bilateral pulmonary tuberculosis, in the hope of stimulating connective-tissue proliferation. Thus far results have been discouraging. The cases were of nodular-cavity and hematogenously disseminated nodular tuberculosis. In two more favorable cases a successful unilateral pneumothorax was instituted, and with healing on the one side disease of the noncollapsed side occurred, which was then collapsed. The double pneumothorax was well tolerated. In this case a predominantly cirrhotic process exists and is still being treated. The other case died as a result of severe hemorrhages and development of a spontaneous pneumothorax.—*Kasuistischer Beitrag zur Pneumothorax-Therapie, Harms, Beitr. z. Klin. d. Tuberk., May, 1923, lv, 162.*—(*H. J. C.*)

Management of Artificial-Pneumothorax Reinflations.—It is only by experience that the amount of gas, and when it should be given, can be judged. The rate of absorption varies under different conditions and at different stages. At the beginning, small and frequent refills are advised until the lung is collapsed, which should usually be after five or six refills and within about two weeks. One next determines the optimum degree of collapse for the individual and how long it will last without a refill,

and by noting the intrapleural pressure at each stage determines the range of pressure within which the lung must be kept. The object is always to keep the lung at rest; alternate collapse and reëxpansion with the attendant "concertina movement" of the lung are to be deprecated. Patients who get large refills at long intervals often complain of dyspnea and discomfort, following by a period of well-being and then a period of increased symptoms prior to the refill; they are also apt to lose weight. If this expansion is not accompanied by any symptoms it usually means that the disease is arrested and the patient able to do without pneumothorax. Vital capacity is of some use in judging the optimum degree of collapse. Refills cause slight temporary diminution, followed at first by improvement, and again, if the next refill is too long delayed, by slight diminution. If pleural effusion develops it is usually best to remove it and replace with gas; otherwise, adhesions are almost certain to form. A partial pneumothorax may sometimes relieve symptoms, but it is useless to continue if no efficient pneumothorax can be obtained. In cases of rapidly advancing disease a spread may occur on the other side after inducing pneumothorax, and later, on stopping refills, improvement on both sides. It should be emphasized that it is rarely necessary to collapse a lung fully and that overinflation often does harm. —*Reinflations in Artificial Pneumothorax Treatment, L. S. T. Burrell, Brit. M. J., March 1, 1924, no. 3296, 368.*—(*A. P.*)

Unusual Case of Tuberculosis Cured by Artificial Pneumothorax.—Rist reports the case of a young soldier who, in spite of the finding of tubercle bacilli in the sputum, was sent to the front in 1917. He had several hemoptyses, and was gassed in October 1918, and evacuated. On admission to the Laennec Hospital he presented a left lobar tuberculosis with cavitation. He received pneumothorax and has remained well, tubercle bacilli having disappeared, and leads an active life.—*Tuberculeux avéré maintenu deux ans aux armées; guérison durable par le pneumothorax artificiel, Rist, Meeting, Soc. Méd. d. Hôp. d. Paris, reported in Presse Méd., June 18, 1924, no. 49, p. 533.* —(*A. P.*)

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